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TUBERCULOSIS OF THE URINARY SYSTEM IN WOMEN.*

REPORT OF A CASE.

By EDWARD H. RICHARDSON, M. D.,

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The purpose of this communication is to present a brief summary of the present-day knowledge of urinary tuberculosis in women, emphasizing especially the possibility and importance of an early diagnosis of this affection. The distressingly large proportion of advanced cases of renal and bladder tuberculosis encountered in every urological clinic renders it sadly apparent that there is more urgent need of familiarity with facts already established concerning this disease than for stimulating further research into its unsolved problems.

Authorities are now pretty generally agreed that the vast majority of cases occurring in women represent blood-borne infection from some other focus in the body—situated, it may be, in the lungs, lymph glands, joints, intestines or elsewhere—which first attacks the kidney and later descends to involve the ureter and bladder secondarily. Primary tuberculous infection of the female bladder through the urethra, if it occurs at all, is exceedingly rare. The same may be said of hæmatogenous bladder infection. An occasional case occurs through direct extension from some nearby focus, as in the fallopian tube, the hip joint, the spine or the bowel; but in these cases the involvement of the urinary system is a late complication. The question of ascending renal infection along the ureter from a bladder focus has long been a favorite topic of energetic controversy between both clinical and experimental observers of large experience. A few loyal and uncompromising champions of this view still maintain that it is of frequent occurrence, especially with reference to involvement of the second kidney. Most observers, however, hold that while this is a theoretical possibility which now and then materializes, it is certainly exceptional in women, and that most of the reported cases admit of more rational interpretation on the assumption of independent hæmatogenous infection.

There are two forms of renal tuberculosis—the *acute miliary*, and the *chronic localized*.

The former is of no clinical significance, since it is but part of a generalized systemic tuberculosis, probably resulting from widespread dissemination of the bacilli through the blood as distinguished from the embolic mode of infection.

Of the chronic localized form various classifications, based upon the pathological anatomy, have been suggested. For practical purposes it is sufficient to differentiate three main types. (1) The *massive*, caseous, or ulcerative—by the older writers happily styled *renal phthisis*. Here the organ becomes converted into multiple cavities which may communicate with the kidney pelvis, are separated from one another by septa of disintegrating renal or fibrous tissue, and filled either with

* Paper read at a meeting of the Johns Hopkins Hospital Medical Society, January 6, 1913.

soft caseous or curdy necrotic material. This may go on to complete destruction of the parenchyma. The capsule and perirenal tissues not infrequently become involved, leading to extensive infiltration or abscess formation. If the ureter becomes permanently obstructed before the secretory portion of the kidney has been fully destroyed, tuberculous pyonephrosis results. Finally, the destructive inflammation may open a branch of the renal vein and lead promptly to general miliary tuberculosis.

(2) The second variety begins in the pyramids and leads to ulceration of the apices of the papillæ with hæmaturia as an early symptom.

(3) Then there is a third variety in which the kidney is studded with numerous firm grayish-white nodules varying in size from one to three or four millimeters in diameter which show little or no tendency to ulcerate. These are probably embolic in origin.

Amyloid degeneration and chronic nephritis are frequently associated with the tuberculous changes.

In the ureter and renal pelvis the disease manifests itself in three distinct forms: (1) the granular; (2) the superficial ulcerative; and (3) the massive infiltrative which involves the deeper layers. Total obliteration of the ureter is not produced, as might be expected, by deep ulceration with extensive loss of tissue, but results from superficial ulcers which destroy the mucosa and submucosa leaving intact the muscle wall, the occlusion being effected through regenerative changes with scar tissue formation. The periureteral changes are interesting and exceedingly important, too, from an operative standpoint, but we cannot enter into a detailed discussion of them here.

Again, in the bladder three distinct stages of the disease can be recognized and differentiated. (1) The first stage is one of granulation and superficial ulceration involving only the mucosa and submucosa. (2) The second presents deep ulcerations which involve the muscle layers. (3) The third is that of complete destruction of practically the entire thickness of the bladder wall through coalescence and extension of the ulcers. In many cases all three stages coexist, and the bladder wall may vary in thickness from a couple of millimeters to two or more centimeters at different portions. In nearly all of these cases the viscus is markedly contracted, and in some instances the whole bladder may be no larger than a hen's egg.

Thus we find a certain degree of uniformity in the manifestations of this disease in all parts of the urinary tract—whether it be kidney parenchyma, renal pelvis, ureter or bladder. Before dismissing the pathology let me emphasize several points: (1) that the disease in its early stages is a localized process, originating in the kidney through blood-borne infection from some other focus in the body; (2) that certainly in considerably over ninety per cent of the cases it begins as a unilateral disease; and (3) that advanced bladder tuberculosis without involvement of one or both kidneys is rarely, if ever, seen in women; whereas extensive renal destruction with only slight invasion of the ureter and bladder is not at all uncommon.

Now, then, what should lead us to suspect the existence of this disease and how are we to establish the diagnosis? Fortunately, there is rarely any great difficulty, if we are careful to obtain a complete and accurate history, and then resort to the various methods of examination now at our command.

In the first place there are certain facts empirically established that are well worth remembering. The disease is preeminently one of young adult life, and is by far the most frequent of all purulent renal affections of this period. It is surprisingly infrequent in phthisical patients, occurring much oftener in apparently healthy individuals springing from healthy families. Not only is it unilateral at the outset in over ninety per cent of the cases, but the relatively infrequent and extraordinarily late involvement of the second kidney is a striking characteristic that obviously has a most important bearing upon the treatment.

The disease may long remain symptomless and be observed first through a mixed infection. On the other hand, while still confined to one kidney and in the early stages it may at any time give rise to any one or all of a characteristic group of symptoms which should lead to its prompt detection. These may be conveniently divided into (a) local, and (b) constitutional symptoms.

(a) Local symptoms:

1. *Polyuria.*—This is a constant early symptom and is usually quite marked. It does not continue, however, after the disease has advanced sufficiently to cause extensive destruction of renal tissue.

2. *Frequent and painful micturition,* present both day and night. Also an early symptom which often occurs without any involvement whatever of the ureter or bladder, but is associated especially with cases in which the disease has extended to the renal pelvis. The pain is referred along the course of the ureter and to the neck of the bladder, coming on at the end of urination.

3. *Hæmaturia.*—Intermittent hæmaturia without obvious cause should always be suggestive of renal tuberculosis. It is surprising how many cases exhibit this as the first symptom. The amount of blood is not large as a rule, in fact, it may be only microscopic, but it occurs continuously night and day for days and even weeks at a time, thus differing from the hæmaturia associated with calculus. This usually indicates ulceration of the renal pelvis or papillæ.

4. *Pyuria.*—Present in all cases at some time. The urine is pale, usually acid, but may become alkaline through a mixed infection with pyonephrosis, low specific gravity, and generally contains albumin in amounts proportionate to the extent of the renal changes and the amount of pus present. Do not, however, fall into the common error of excluding renal tuberculosis because of the absence of albuminuria. The two are not invariably associated as is commonly believed. Rovsing has emphasized this point within a few weeks, reporting seven cases in which this sign was entirely absent. The bladder urine contains much more pus as a rule than urine obtained direct from the kidney through a renal catheter or endoscope. The leucocytes found may or may not show degenerative changes. Mononuclear cells

usually predominate, but seventy-five to eighty per cent of polymorphonuclears is not uncommon. The contents of the urine from each kidney vary considerably at different stages of the disease, as one would expect. Remember that a persistent acid pyuria from the sediment of which no organism grows on ordinary media demands that a diligent search be made for renal tuberculosis. Indeed, it is safe to say that we shall not often err, if we assume that we are dealing with renal tuberculosis whenever we find a few leucocytes in the urine of a patient with bladder symptoms, provided the ordinary bacteriologic examination of the urine is negative.

5. *Pain* in the lumbar region over the kidney is not uncommon. It is dull and aching in character and may radiate along the ureter. It may be colicky in type, too, becoming extremely severe when the ureter is blocked by a blood-clot or mass of caseous material thrown off from the disintegrating kidney.

6. When palpable the diseased organ is usually *sensitive*. It may be normal or irregular in shape, but generally is not much enlarged, unless there is an associated pyonephrosis, when it may attain enormous size. Bear in mind, however, that the large, easily felt kidney may be the normal one that has undergone compensatory hypertrophy to meet the extra demands put upon it, whereas the diseased one may be represented by a shriveled sac of inspissated pus tucked deeply away beneath the ribs.

7. *Tubercle bacilli* can be demonstrated in the urine in fully eighty per cent of the cases if persistent and repeated search is made from the twenty-four hour specimens. The proper way to search for them is to examine a couple of slides prepared each day from fresh twenty-four hour specimens, instead of a number of slides from one specimen. Preliminary renal massage with induced diuresis may cause a shower of them to appear in the urine, and is a point worth bearing in mind. Positive animal inoculation is often helpful. It demonstrates conclusively the presence of tubercle bacilli in the urine; but remember that these may be present simply as a product of renal excretion when the entire urinary tract is absolutely free from the disease; so that a single demonstration is of itself not conclusive proof of urinary tuberculosis.

(b) Constitutional symptoms, the most important are:

1. Irregular fever with evening exacerbation. Blocking of the ureter is accompanied by a sharp rise in temperature which continues for several days, probably due in part, at least, to absorption of toxins from the renal pelvis.

2. *Night sweats* are not uncommon in this as in other forms of tuberculosis.

3. *Emaciation* which is often progressive.

When the disease invades the bladder its presence is very promptly heralded by symptoms of cystitis. There is frequent urgent urination day and night, associated with great pain both during and especially at the end of the act. Emptying the bladder affords little or no relief, and as the disease advances a stage is finally reached where marked strangury and tenesmus dominate the symptom-complex. The viscus becomes extremely intolerant and irritable; it robs the unfortunate victim of all restful sleep, causing constant distress, and often, indeed, most excruciating pain. These symptoms, however, may be out of all proportion to the extent and degree of bladder involvement.

Cystoscopy is an invaluable aid in enabling us to determine accurately certain important points: (1) to make a positive diagnosis; (2) to determine the extent, location, and degree of bladder and ureteral involvement; and (3) to investigate the functional activity of one or both kidneys. In the advanced cases the bladder is so intolerant of instrumentation as a rule that this examination cannot be satisfactorily conducted without general anæsthesia; but in the early stages—where it is of greatest value—no difficulty whatever is usually encountered. The necessity of general anæsthesia, however, is in itself not a contraindication to the cystoscopic examination being made, but, on the contrary, should be employed whenever necessary.

Generally speaking the bladder does not present a specific picture in the late stages of the disease; the tuberculous nature of the ulcers being conclusively evident only when their relationship to tubercles can be determined, and these are not very commonly found. When observed they appear either discrete or grouped, particularly about the trigonum and ureteral orifices, as minute, slightly elevated, grayish-yellow nodules surrounded by a zone of hyperæmia. They are to some extent simulated in appearance by little nodular granulations and minute pearly vesicles filled with grumous material which are quite commonly observed in a variety of bladder conditions; but close examination will always disclose that these lack the characteristic areolar redness, and usually are indiscriminately scattered over the bladder walls. There may be a diffuse reddening and œdema of the bladder lining, or such localized areas may be separated by patches of healthy looking mucosa. Mixed bladder infections are not uncommon in women, producing an acute diffuse cystitis which causes the walls of the viscus to be covered with mucus, pus, or incrustations that quite obscure the associated tuberculosis. Such conditions readily clear up, however, under ordinary treatment with irrigations, etc., which, on the contrary, serve only to aggravate tuberculous cystitis. Of distinct diagnostic value is the fact that tuberculous ulcers are not widespread in the bladder as a rule, but tend to localize about the trigonum and ureteral orifices. They present an irregular outline with elevated, thickened, undermined edges surrounding an unhealthy base which is covered with dirty, necrotic material. A zone of dense infiltration is constantly observed around them. One characteristic is the absence of incrustations or phosphatic deposits so commonly found on non-tuberculous ulcers. If the bladder is examined while the disease is still confined to the region of one ureteral orifice, pictures are seen which may be considered practically diagnostic. Thus ulceration confined to this region indicates that the kidney of that side is almost surely tuberculous. A puffy, red ureteral orifice in an otherwise healthy looking bladder is very suggestive. So also is the retracted, crater-like ostium. Sometimes the orifice is found enclosed in a circle of little vesicles of uniform size and symmetrically arranged—the so-called bullous œdema—which is considered pathog-

nomonic of descending renal tuberculosis. As the ulceration and infiltration advance the ureteral orifices are distorted into a variety of shapes, becoming irregular in outline and often gaping widely. Occasionally the diseased ureter is visible for two centimeters as an elevated cord obliquely traversing the wall of the viscus.

Accumulated experience seems to justify catheterization of a sound ureter through a tuberculous bladder in cases of unilateral infection, for the purpose of investigating the competency of the non-tuberculous kidney. Many of the world's most conspicuous leaders in this field who have consistently practised this procedure for years in large numbers of cases state explicitly that they have never seen ascending renal infection follow it. Experimental work has shown that it is exceedingly difficult to produce ascending renal tuberculosis by the simple introduction of tubercle bacilli into the lower end of a healthy ureter. Moreover, even in cases of bladder tuberculosis sufficiently extensive to interfere through ulceration and infiltration with the mechanism which normally closes and safeguards the ureteral orifice, so that during vesical contraction the ostium gapes widely and permits reflux of infected urine, ascending renal infection is the exception rather than the rule. In an extensive search through the literature I have been unable to find any statistics showing the relative frequency of occurrence of the disease in the remaining sound kidney of patients who had the healthy ureter catheterized at the time of operation, as compared with those in whom ureteral catheterization was omitted. But the unanimity of opinion among those most competent to speak upon this point makes it reasonably certain that the danger of infecting the healthy side is negligible, either with the direct or indirect method of cystoscopy, provided one employs certain simple precautions. These are thorough preliminary irrigation of the bladder, induction of active diuresis, administration of urinary antiseptics, and the careful introduction of the catheter a distance of only two or three centimeters up the ureter with a minimal amount of trauma.

Certainly the danger is far outweighed by the importance of determining as accurately as possible the functional capacity of the supposedly sound kidney before removing one known to be tuberculous. It is not within the scope of this paper to discuss the relative merits of the various methods at our disposal for doing this. In women the problem is greatly simplified through the use of the Kelly cystoscope with air distention of the bladder. With this simple instrument we are able to get a pretty accurate idea of the condition of the presumably healthy side without introducing a catheter into the ureter at all. Valuable information may be obtained in several ways. Thus with the patient in the knee-chest posture and the bladder fully distended with air, by simply placing the end of the cystoscope directly over the ureteral orifice so that the urine spurts into the tube, within a few minutes we can collect sufficient urine for chemical, bacteriologic and microscopic study. So, too, we can observe directly the exact time of appearance in the urine of the anilin dyes, such as methylene-blue or indigo-carmin, that have been given hypodermically. Of still more value is the method of obturating the ureter of the diseased side with a large flute-end catheter, so that no urine flows into the bladder from this side, and then, after washing out the bladder, to collect the urine from the healthy side transvesically. This is not reliable for bacteriologic study, but is an excellent and satisfactory method of applying the various functional tests to this class of cases. Moreover, an experienced observer who knows how to make due allowance for bladder contamination learns much of practical value from the gross appearance as well as the microscopic and chemical study of specimens thus obtained. If circumstances seem to justify the introduction of a catheter into the healthy ureter, it can be most safely done through the open cystoscope which permits one to cleanse and partially disinfect the ureteral orifice in addition to the precautionary measures already enumerated before the catheter is inserted. This comparative study by volumetric, colorimetric, bacteriologic, chemic and microscopic methods of the urine collected separately from the two sides is of the greatest help in establishing the diagnosis, revealing the extent of the disease and determining the competency of the non-infected kidney.

It becomes evident from what has been said that the diagnosis of urinary tuberculosis in women should not be a difficult matter. To summarize a careful history will often bring out protracted exposure to tuberculous infection followed in time by some or all of the symptoms enumerated above. Renal tuberculosis is the most frequent of all suppurative diseases of the kidney from twenty to forty years of age. Unexplained cystitis, even of a mild grade, in a young person should of itself excite suspicion of tuberculosis, because in other forms—such as gonorrhœal, that due to the colon bacillus or other common organisms, or associated with tumors, calculus, foreign bodies, stricture of the urethra, cystocele, etc.—the cause is readily demonstrable; thus the insidious onset becomes of distinct diagnostic value. The general physical examination will not infrequently disclose a primary focus elsewhere in the body. Locally one finds in many cases a sensitive kidney; a sensitive ureter on abdominal palpation just over the point where it crosses the pelvic brim; on vaginal examination the thickened, beaded ureter easily identified traversing the anterolateral fornix; and the infiltrated, hypersensitive trigonum. The bladder capacity is greatly reduced—a contracted, irritable viscus, intolerant of any instrumentation. The cystitis is of a type that resists or may even be aggravated by treatment with irrigations, especially if silver salts—so valuable in other bladder infections—are used. Then a persistent acid pyuria is present from which no organism grows on ordinary media and is associated with the other urinary characteristics already described, including the demonstration of the tubercle bacillus. The cystoscopic findings and the comparative functional tests furnish indispensable information, as detailed above. Further, the radiographic disclosures may prove of great assistance, especially when intensified by the preliminary introduction into the renal pelvis of some substance impervious to the rays, such as collargol. And finally, one may profitably resort to the use of tuberculin as a diagnostic measure in properly

selected cases. If after exhausting all these measures the surgeon is still uncertain as to the competency of the supposedly healthy kidney, it is a perfectly legitimate procedure to investigate it directly and thoroughly through an exploratory lumbar incision before removing its diseased fellow. This course, indeed, has been enthusiastically recommended by some surgeons in all cases where nephrectomy is to be undertaken for any reason whatever.

The treatment of the disease has already been indicated. No matter at what stage it is discovered, nor how extensive the bladder involvement, but provided only it is unilateral so far as the kidneys are concerned, nephrectomy—nephroureterectomy, if the ureter is extensively diseased—should be promptly performed. If but one kidney is slightly involved while the other is practically destroyed or converted into a pus sac, the latter should still be removed or first drained and later removed, and the patient's health will generally be benefited as a result. If there is still some secretory tissue left in the worse damaged kidney of a patient afflicted with advanced bilateral disease, nephrostomy with establishment of a permanent lumbar fistula, is a useful palliative measure. In determining the treatment of a specific case remember that the associated albuminuria so commonly found on the non-tuberculous side generally disappears after removal of the infected kidney. This is probably a toxic or perhaps a true reflex albuminuria. I am convinced that it is a dangerous thing to temporize in the early cases by treating them with tuberculin alone, or in conjunction with other therapeutic, hygienic and climatic measures in an effort to avoid operation. How, as a matter of fact, are we to determine which are the early cases? Surely it has been amply shown that the severity of the symptoms is not a reliable criterion. Besides, spontaneous healing of renal tuberculosis has not been satisfactorily demonstrated, so far as I know; unless the apparent healing following extensive destruction of the organ with its conversion into a sterile pyonephrosis or sclerotic kidney be so regarded. On the other hand, there is no scarcity in the literature of cases coming to operation or autopsy after weeks and months of treatment with tuberculin, but in every instance that has come to my notice not only was there complete absence of any attempt at healing in the kidney, but fresh foci of the disease were repeatedly encountered. The advocates of conservative management of the incipient cases have not been able, therefore, to produce convincing proof in support of their claims, and consequently some of the most ardent of them have become deserters within the past few years and have come over to join the ranks of the majority who believe in early and radical operation, and whose results certainly seem to leave no doubt as to the wisdom of this course. After removal of the diseased kidney in cases of unilateral infection the bladder involvement, even though extensive, will heal spontaneously in nearly all cases. This may be hastened by appropriate treatment. If only a single focus exists in the bladder, or if there are multiple discrete ulcers, it is helpful to apply the actual cautery or strong silver nitrate. It is still better to excise the ulcerated area when possible. If the disease is too extensive to be successfully treated by these methods, instillations of a iodoform—olive-oil emulsion, or of carbolic acid, or of bichloride of mercury are of distinct value. The last named is probably the best; beginning with weak solutions and small amounts and gradually increasing until 50 cc. of a 1:10,000 or 1:5000 strength can be retained. These should be given twice a week, and the bladder should not be distended. Carbolic acid, too, is highly recommended. It should be used as advocated by Rovsing, who after washing out the bladder, introduces 50 cc. of a six per cent solution, which is left for three to four minutes and then removed. This is repeated until the solution returns clear. At first the instillations are given at intervals of two days, then at longer intervals of one, two, and three weeks or a month. Both the bichloride and carbolic instillations are exceedingly painful and morphine should be freely used when they are given. It is important also to allay the constant pain during the intervals between treatments so that the patient may secure restful sleep; for this purpose opium and belladonna in the form of suppositories is the best medication. The usual hygienic and dietetic measures adaptable to tuberculous cases in general should also be systematically employed in patients suffering from urinary tuberculosis, whether operated upon or not. Aside from tonics and sedatives, internal medication is of very little value; such urinary antiseptics as urotropin, salol, salicylic acid, oil of sandal-wood, etc., failing utterly, unless there is a mixed infection. Casper says that the only rational internal remedies are creosote, guaiacol carbonate and ichthyol, either of which he allows without restriction as long as the patient can tolerate them. He recommends that these drugs be given in oil enemata, because they are so unpalatable—℥i to ℥vii of olive oil and inject a small syringeful into the rectum twice daily. Mineral waters are useful for diluting the urine and thus rendering it less irritating. In cases of bilateral disease, in inoperable cases, and as a post-operative measure in advanced bladder tuberculosis, tuberculin should certainly be given a cautious trial therapeutically. The general condition of the patient is said generally to improve following its use, due, Wildbolz thinks, to its fortifying the organism against the toxins of the bacilli rather than to stimulating local healing processes. In the hopeless cases with intolerable pain, permanent vesical fistula, or complete deflection of the urine from the bladder by dividing the ureters and bringing their proximal ends out to drain permanently through lumbar incisions are most grateful palliative measures.

Pregnanacy quite certainly aggravates renal tuberculosis. Generally speaking, if the disease is unilateral, nephrectomy should be done and the pregnancy be allowed to go on undisturbed, but bilateral involvement is an indication for abortion.

In conclusion, I wish to report briefly a case that demonstrates very forcibly how insidious and deceptive this disease may be, and how important it is never to remove a tuberculous kidney until the condition of the supposedly healthy one has been accurately determined.

A few months ago, Mrs. J. E., white, age twenty-nine years, was referred to me by her family physician on account of obstinate symptoms of cystitis. The history pointed strongly to tuberculous

involvement of the left urinary tract and bladder, but did not cast the slightest suspicion upon the right side. The left kidney was not palpable, but there was marked sensitiveness and muscle rigidity along the course of the left ureter, the lower portion of which on vaginal examination was felt to be greatly thickened, nodular and exquisitely painful to touch. On the right side, however, palpation revealed no abnormality whatever, either with reference to the kidney or ureter. On cystoscopic examination the left ureteral orifice presented the unmistakable picture of tuberculosis; it was retracted and surrounded by the typical bullous œdema, and areolar redness already described, whereas the remainder of the bladder, including the right ureteral orifice, presented no noteworthy abnormality. Purulent urine was observed spurting from the left orifice at regular intervals, but although the right orifice was carefully watched for some minutes, it was not seen to functionate at all. This first aroused my suspicions with reference to the right kidney, and I again questioned the patient closely, but could not obtain any evidence of its ever having caused the slightest symptom. Two days later, after induced diuresis, I repeated the cystoscopic examination and again observed the right ureteral orifice almost continuously for twenty minutes or more, but again failed to see any urine expelled. After an interval of a few days still a third attempt was made to get some idea of the functional capacity of the right kidney, but with the same negative result as before. Instead, therefore, of carrying out my original intention of doing a left nephroureterectomy, I decided to first explore the right kidney and determine its condition. After exposing it through a lumbar incision I found that it had been almost completely destroyed and converted into a pus sac, the thin wall of which contained only a vestige of renal tissue left. This condition had been brought about by a tuberculous stricture of the ureter situated just at its origin from the renal pelvis, which had given rise to a pyonephrosis, and this in turn was responsible for the extensive destruction of renal parenchyma. The organ was a little larger than normal, but its general contour was not much changed, and below the point of stricture the ureter was perfectly healthy.

It is remarkable that such extensive destruction could have occurred without ever having produced a single symptom referable to this side. The case illustrates very forcibily, therefore, how insidious this disease may be and how imperative it is to explore the supposedly healthy kidney whenever its condition cannot be satisfactorily determined in any other way, before removing its fellow known to be tuberculous. Had the single clue pointing to the right side in this case not been followed, notwithstanding the fact that its involvement was contradicted by all the clinical evidence, and had the left kidney been removed as was originally planned, prompt fatality would, of course, have been the inevitable result.

THE EFFECT OF CHEMICAL TREATMENT UPON THE BALTIMORE CITY WATER.

By William W. Ford, M. D., and Ernest M. Watson, A. M.

(From the Laboratory of Hygiene and Bacteriology, The Johns Hopkins University.)

In previous papers[1] we have pointed out the extreme pollution of the Baltimore City water supply and have described some of the organisms which may be isolated from it. This water practically always has contained an excessive number of bacteria, the count fluctuating between twenty-five hundred and five thousand per cubic centimeter. This high bacterial content is not of itself dangerous nor to be wondered at when we consider the broad area of rather thickly settled farming land which makes up the watershed of the Gunpowder River, our chief source of supply. The dangerous feature of our water is the predominance of bacteria evidently derived from the intestinal tract of man and animals, fermenting organisms occurring with great regularity in one cubic centimeter quantities and not infrequently in dilutions of 1-10 and 1-100. Plates poured from these fermentation tubes reveal *B. coli* as the usual fermenter, but we frequently find organisms belonging to the "cloacæ" group. A species closely related to *B. cloacæ* of Jordan has also been isolated on a number of occasions and we have been particularly interested in its study. This organism resembles *B. coli* in many of its cultural features, having the same gas formula, a predominance of hydrogen over carbon dioxide. It is, however, a rapid liquefier of gelatin, the liquefaction taking place within three or four days. It is evidently the organism which at various times has been designated as a "liquefying colon." Agar and gelatin plates from the water also show colonies characteristic of intestinal bacteria and not the pigmented and spore-bearing organisms found normally. These colonies are usually *B. coli* or some other fermenter, but *B. fœcalis alkaligines* of Petruschky is quite a frequent isolation.

During most of the time at which the water has been studied qualitatively with a view to discovering the kinds of organisms encountered in it the various species have exhibited a somewhat constant ratio to each other, *B. coli* being the most frequent fermenting organism, the others appearing much more rarely. In the summer of 1910, however, at the time of a severe drought in Baltimore and Maryland, the number of liquefying fermenting organisms was greatly increased at the expense of *B. coli*.[2] At this time the presumptive test was positive constantly in a dilution of 1-100 and on one occasion in a dilution of 1-1000. Plates poured from these fermentation tubes revealed few colonies of *B. coli*, but a variety of organisms belonging to the "cloacæ" group. During this period the bacterial count was not above what may be regarded as normal for the Baltimore water approximating four to five thousand per cubic centimeter. This increase of pollution or concentration of the sewage in the water was coincident with the summer rise of typhoid fever, Baltimore being in the grip of a fearful epidemic of the disease in 1910. The number of reported cases of typhod fever for the year reached nearly 1900 (1890) with 235 deaths in a population of 585,000. By far the larger number of these cases and the highest mortality from the infection occurred during the extremely hot, dry weather of August, September and October, the case incidence and the morbidity not falling to normal until the end of December. While a definite causal relation between the con-

tamination of the city water and the enteric fever could not be made out, the variations from month to month in the amount of typhoid when compared with the rise and fall of the pollution of the water supply were extremely suggestive as indicating such a relation.

In June, 1911, the city officials of Baltimore, under the direction of Dr. Stokes,[3] city bacteriologist, began the treatment of our water supply with calcium hypochlorite. This was added to the impounding reservoir of the Gunpowder River in amounts varying from 0.4 of 1 part of available chlorine per million parts of water to 1.5 parts per million. Since that time the treatment has been continued up to the present, but in June, 1912, at the suggestion of Dr. Stokes, alum was also added to the water. Beginning a few months after the hypochlorite treatment was instituted we were able to make weekly examinations of the Gunpowder water over a period of

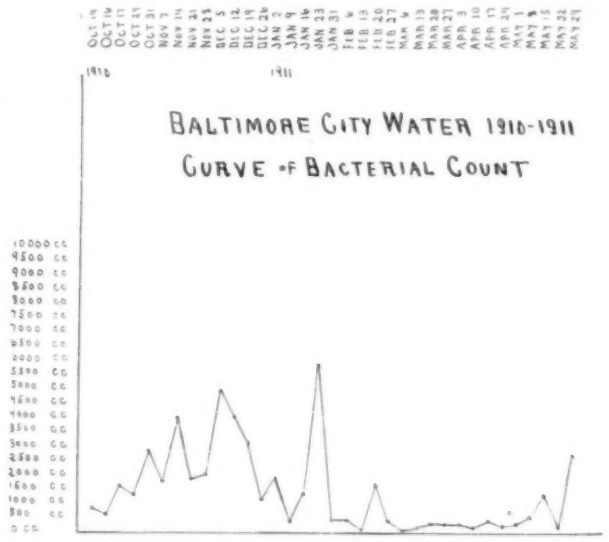

CHART I.

thirteen months, Dr. Mary R. Fleming conducting these experiments during the summer season. We were particularly anxious to determine the effect of the chemicals upon the microorganisms present in the water by comparing bacterial counts over fairly long periods before and after the treatment. In a recent paper Stokes (*l. c.*) has called attention to the percentage decrease in organisms following the addition of the hypochlorite, taking his samples from the Gunpowder River before treatment and from the city taps, the bacterial reduction varying from 89 to 97 per cent. Our own method of examination differs somewhat from that of Stokes, but brings out the same point. By comparing Chart I, which gives the bacterial content of the water during 1910 and 1911, with Chart II, for 1911 and 1912, it may be seen that the bacterial content was the same and that fluctuations of about the same character were present during both periods up to July, 1912. From this time on the number of organisms has been persistently and definitely lower. Over a period of four months the city water showed less than 500 bacteria per cubic centimeter, a condition not heretofore encountered in our studies. But one similar period has ever been observed, in March and April, 1911. This lasted but a short time, however. The 1912 period of low bacterial content is coincident with the period when both alum and hypochlorite had been added to the water. It would seem therefore that the treatment with hypochlorite alone did not have a marked influence upon the character of the Baltimore City water, but that a definite diminution in the number of organisms appeared when the alum treatment was utilized as well as the hypochlorite.

When we come now to the consideration of the presence of fermenting organisms a remarkable condition presents itself. These organisms have been but little affected if at all by the addition of chemicals. If we compare the various quantities of water required to give positive presumptive tests during the past thirteen months (Chart III) excepting a short time in 1910

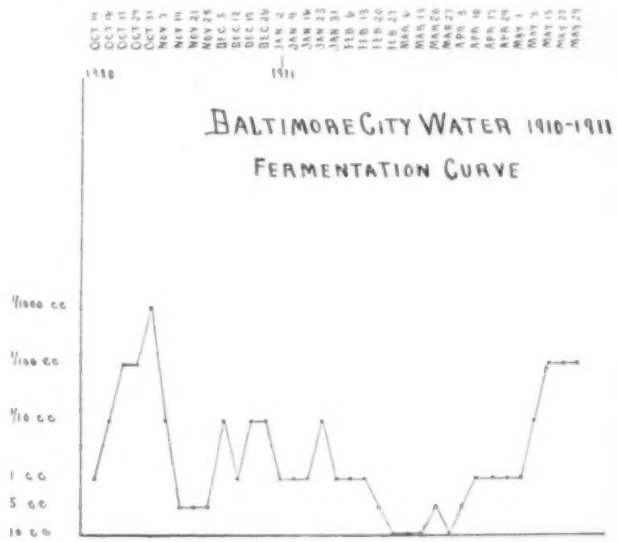

CHART III.

when the degree of pollution was extreme, with the quantities required before this period (Chart IV), little or no difference can be noted. During almost the entire time, both before and after the treatment, the presumptive test has been positive in quantities of 1 cubic centimeter, 1-10 and 1-100 of a cubic centimeter. Even during the period of low bacterial count, in the summer of 1912, fermentation occurred with great regularity in a dilution of 1-10. The organisms have also in our experience remained the same qualitatively, *B. coli* being the predominant form with the occasional appearance of liquefying fermenters. These results are somewhat at variance with results obtained elsewhere. In general coincident with the drop in the bacterial count after chemical treatment, a drop in the number of fermenters can also be made out. It is evident that the Gunpowder water offers some special resistance to the action of calcium hypochlorite alone and to this chemical in combination with alum. Possibly, as Stokes has suggested, a different method of applying the treatment, as by adding the chemicals to the water after sedimentation in the storage

reservoirs, is necessary in order to obtain a complete elimination of the intestinal bacteria from the supply. It is also possible that the continued high bacterial counts which we have found are the result of after growths of spore-bearing bacteria. Our plates have not, however, indicated this to be the case.

instituted in June, 1911, and it apparently kept the typhoid fever down during the subsequent summer season and during the season just past without, however, eliminating the summer rise.

Just how much typhoid fever in Baltimore is water-borne

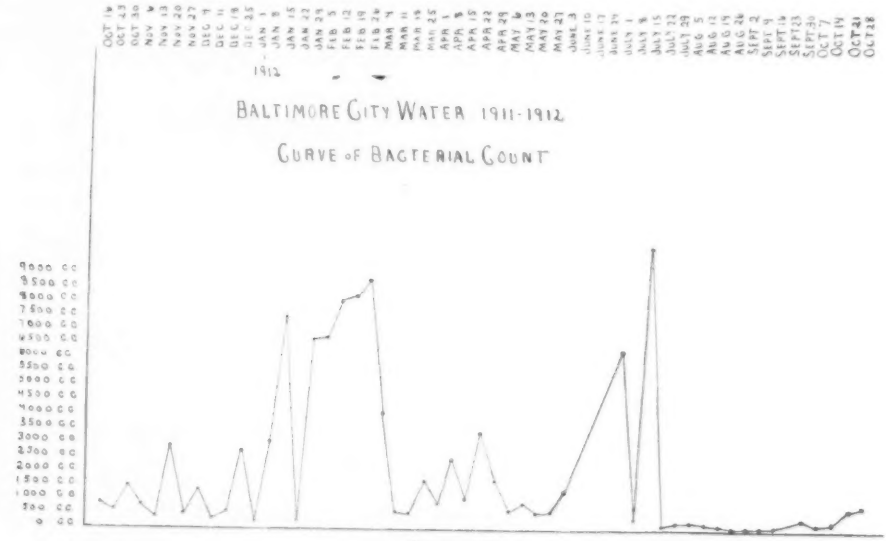

CHART II.

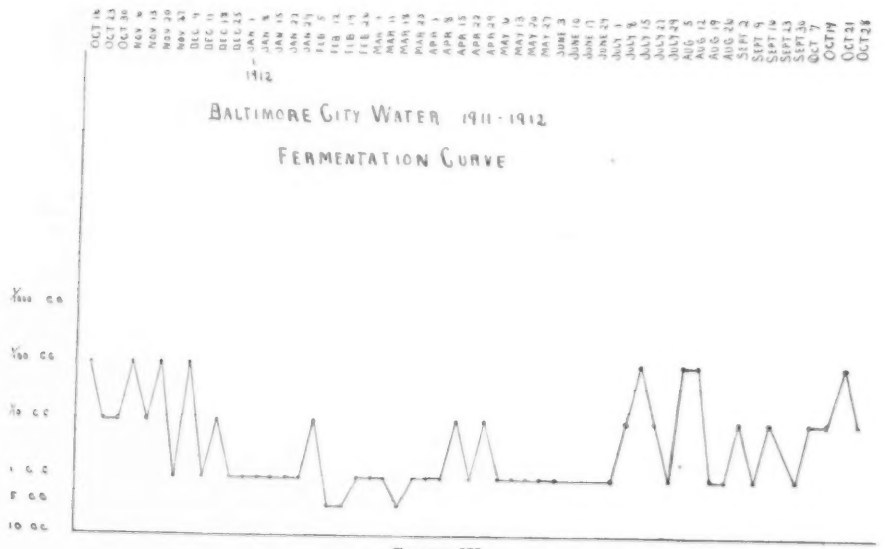

CHART IV.

Finally the question rises as to what effect the chemical treatment of the water may have had upon the typhoid fever in Baltimore and particularly upon its summer rise. This is a question of great complexity and one in which there is room for abundant discussion. As Stokes (*l. c.*) has pointed out, there has been a steady diminution in the amount of our typhoid fever since the year 1910. This is well brought out in Charts V and VI which give the case incidence and mortality for the past six years. The chemical treatment was

in origin is of course an open question. Certainly a considerable part of the disease here can with reasonable certainty be ascribed to contamination of the supply, since cases of typhoid fever upon the water shed are by no means infrequent. The chemical treatment has probably had a pretty definite influence in cutting down the typhoid due to this factor and the steady diminution of the disease in 1911 and 1912 can reasonably be ascribed to it. That the summer rise has not been eliminated, but merely diminished in intensity, cannot be regarded as an

argument against the value of the method. The conditions in Baltimore are extremely complicated, just as they are in other cities in America with a large colored population, a hot summer climate and a poorly controlled milk supply. The typhoid fever from direct contact, from milk, from bacillus carriers will not be influenced to any marked extent by water purification, except as any diminution of the disease from one factor is bound to cause diminution of the disease from other factors by cutting off the sources of infection. Further experience alone can determine whether the fall in typhoid already noted will continue. The water is constantly improving in character and more marked results may be looked for during the coming summer. The results already obtained, however, are so favorable, despite the resistance of the water to chemical treatment and despite the continued presence of typhoid fever in our midst, as to justify the use of chemicals in our water supply until a filtration plant is built and established upon a satisfactory working basis.

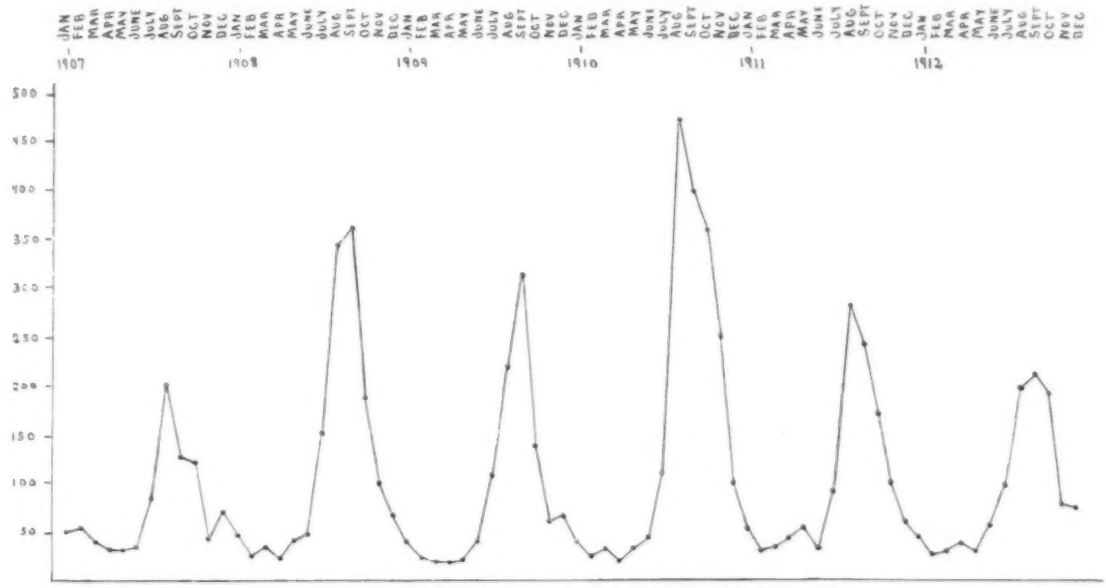

Chart V.—Typhoid Fever Case Incidence, 1907-1913.

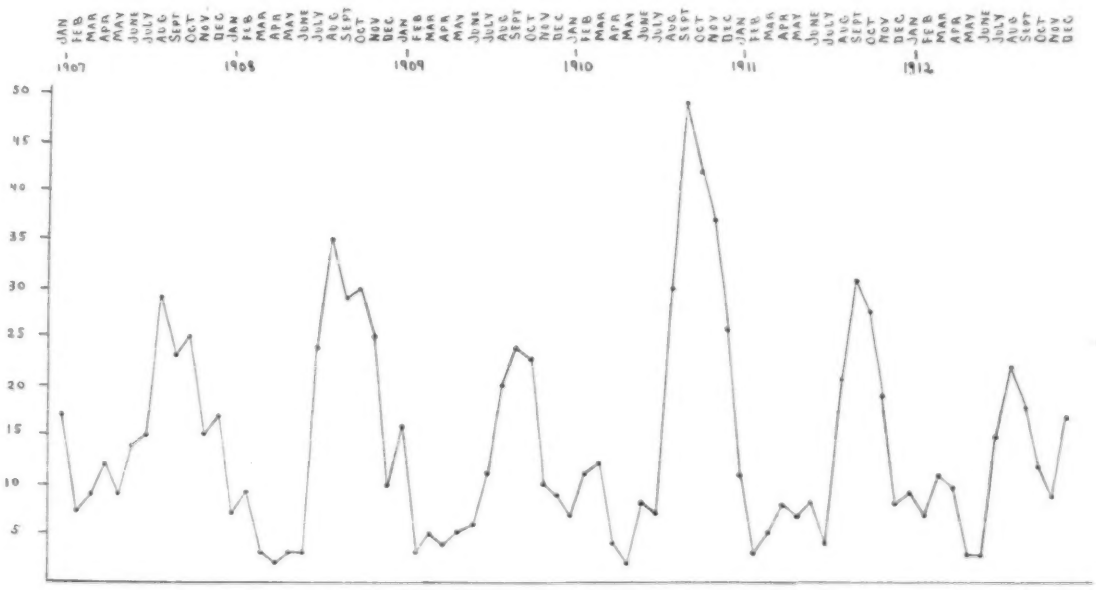

Chart VI.—Typhoid Fever Mortality, 1907-1913.

BIBLIOGRAPHY.

1. Ford: Johns Hopkins Hosp. Bull., 1911, XXII, 53. *Idem:* p. 351.

2. Ford and Watson: Johns Hopkins Hosp. Bull., 1912, XXIII, 275.

3. Stokes: Bull. Med. and Chir. Fac. Md., 1912, v. 73.

CERTAIN DANGERS OF THE ADENOID OPERATION.*

By W. E. Grove, M. D., Milwaukee, Wis.

The adenoid operation is the most frequent operative procedure of the rhinologist, laryngologist or otologist. This operation is regarded by the laity and by a great many physicians as quite simple and absolutely harmless, and, if we consider the large number of these operations performed every year, and the relatively meagre statistics of its complications, it does not surprise us that this opinion is prevalent. There are three reasons for the meagreness of statistical material concerning this operation. First, few surgeons enjoy publishing their accidents. Second, the operation is generally performed outside of a hospital and the surgeon does not usually control his patient long enough after the operation. Third, the operation is frequently performed by the general physician who is too busy to publish his results.

The most frequent and dangerous complications of the adenoid operation can be placed in two general groups: 1, post-operative bleeding; 2, post-operative infections. The post-operative bleeding can be of a very severe nature. This can be seen from the work of Barrell and Orr [1] who, in 1907, reported 7 cases of fatal bleeding after the adenoid operation; also from the work of Heymann [2] in which Burger is reported to have collected from the literature 40 cases of severe bleeding, with 3 or 4 deaths.

I have prepared this paper under the stimulus of two post-operative infections and in the hope of being able to throw a little light on the second large group of the *infectious complications of the adenoid operation.*

That such post-operative complications must occur is apparent when we remember that the operation is done by sense of touch and in an already infected field which cannot be surgically cleaned. Indeed, the fever which usually appears after most adenoid operations is an indication of an infection which the organism is in most cases able to overcome.

The bacteriological flora of the nose has been described by Kobrak,[3] Brieger,[4] Delsaux,[5] Burack,[6] Walter [7] and Winkler.[8] Brieger frequently found large numbers of microorganisms on the surface of adenoids in children in whom the mechanical cleansing of the nose was hindered by a deficient power of forceful expiration. If, after carefully cleansing the vestibulum, the nose was now blown upon plates or into bouillon he found numerous colonies of various organisms; *i. e.,* streptococci, staphylococci, diplococci and bacteria of various sorts. In order to prove that a certain number of these organisms came from the surface of the pharyngeal tonsil, he carefully placed coloring matter on the surface of the adenoids, which coloring matter was soon after found in the nasal excretions. Walter (*l. c.*) found staphylococci present in 56 of 100 cases, which he examined for acute or subacute rhinitis, and according to Haslauer,[9] these organisms are present in 25 per cent of all normal noses. Walter also found other organisms present, among which were the *B. segmentosus* of Cautley, the *micrococcus catarrhalis,* the *B. mucosus capsulatus* and the pneumococcus. It is also a well-known fact that the diphtheria bacillus is frequently present in the tonsillar crypts of the chronic bacillus carriers.

It is a very well-known fact that these microorganisms are either non-virulent or of a low grade of virulency. Brieger (*l. c.*) is of the opinion that the virulency of these organisms is increased after operation, due to the fact that the bactericidal fluids of the tonsil, which usually flow toward its external surface and exert there a bactericidal inhibition, are removed by the excision of the adenoid tissue.

Kobrak (*l. c.*), on the other hand, who examined the relative numbers and virulence of the microorganisms present before and after operation, found, in contradistinction to Brieger, that the number and virulence of these bacteria were only increased in such cases where there was a preexisting nasal or aural infection.

The fact that trauma itself can call forth inflammation is a well-recognized one in pathology. Kobrak believes that it is much more sensible to hold the trauma as the chief inciting agent for the infection, especially in such a field as the nasopharynx, where a latent infection is practically always present. This must be particularly true in the chronic carriers of the diphtheria bacillus and the meningococcus. Burack (*l. c.*) is also of the opinion that the post-operative infection is due to the fact that the virulence of bacteria already present is increased through the trauma of the operation or the loss of blood.

Fever has been very frequently observed after adenoid excision. Kobrak records 30 out of 100 cases with fever, whose average duration was 3.3 days, and whose height did not in any case exceed 102.2° F. Microscopic examination of the adenoid tissue in these cases did not show them to be infected.

Winkler,[10] who always operates in a hospital, reported temperature in 50 per cent of 58 cases. Burack (*l. c.*) found a temperature in 58 out of 540 hospital operations. All these observations point to the fact that infectious processes do occur after adenoid excision. That they do not more frequently lead to more serious complications is best explained, to my mind, by the fact that the *operative field presents a broad surface with excellent free drainage.*

Generalized septicemias are not unknown after the adenoid

* Most of the material for this paper was collected in the University Klinik of Prof. Gerber for Diseases of the Nose and Throat at Koenigsberg, Germany.

[1] Barrell and Orr: Zentralbl. f. Laryngol., xxiii, 163.
[2] Heymann: Arch. f. Laryngol., 1908, p. 15.
[3] Kobrak: Arch. f. Laryngol., xix, 320.
[4] Brieger: *Ibid.*, xii.
[5] Delsaux: Zentralbl. f. Laryngol., iii, 27.
[6] Burack: Zeitschr. f. Laryngol., iii.
[7] Walter: J. Am. M. Ass., 1910.
[8] Winkler: Verhandl. des Vereins suddeutsch. Laryngol., 1906.
[9] Haslauer: Cit. by Walter (*l. c.*).
[10] Winkler: Cit. by Kobrak (*l. c.*).

operation, six such cases having been reported in the literature by Brieger, Shurley,[11] Schramm[12] and Parrel.[13]

Coley[14] from his own practice described one case of endocarditis after adenoid removal and reported two other cases from the literature. A patient of Montengohl[15] was taken with an attack of chorea and endocarditis after an adenoid operation. In a paper by Delsaux (*l. c.*) Broeckaert is cited as having seen a post-operative case of combined endocarditis and acute articular rheumatism. Bernhard[16] also reported one case of acute articular rheumatism as a complication of the adenoid operation.

Practically all of the acute infectious diseases of childhood have been observed as post-operative sequelæ. In his paper on the complications of the adenoid operation Delsaux (*l. c*) reports one case of a rubeola-like eruption, four cases of scarlatiniform erythema, and Brieger (*l. c.*) operated during the incubation stage of chicken pox and observed after the operation a full-blown pseudodiphtheritic localization of the chicken pox in the pharynx.

The cases of scarlet fever and diphtheria which have been reported as complications of the operation can be explained in two ways. Either the operation was carried out during the incubation stage of these conditions or it was performed in patients who were chronic bacillus carriers, in whose throats the bacillus of diphtheria or the virus of scarlet fever was present in latent or non-virulent form. All together 8 cases of post-operative scarlet fever are reported by Kobrak, Burack and Bernhard, and 6 cases of diphtheria were reported by Kobrak and Hennebert.[17]

In the above we have described the general infectious complications of the adenoid operation. Acute local post-operative infections are also quite frequent. It is almost to be expected that when one removes one part of Waldeyer's ring that an acute infection of the remaining lymphoid tissue will occasionally be seen. Only the fact that both pharyngeal and faucial tonsils are removed so often together can explain the fact that we do not see these post-operative anginas more frequently than we do. These anginas have been described by Delsaux (*l. c.*) Hicguet[18] and Trofinow.[19] The latter saw 5 cases of post-operative angina follicularis among 508 adenoid operations. Gerber[20] saw a peritonsillar abscess develop a short time after the removal of an adenoid in an adult.

It is well known that the regional lymph glands are at times swollen and sensitive to pressure. Rivière[21] observed one case of adenitis among 150 cases of operated adenoids, and Grönbeck[22] describes 4 cases of extensive post-operative affection of the cervical lymph glands, which called forth severe and long lasting symptoms. Thost[23] saw, 8 weeks after operation, an abscess of the left lateral pharyngeal wall and a swollen fluctuating gland at the angle of the jaw which discharged a tablespoonful of pus after incision.

I should now like to call attention to a group of complications of the adenoid operation which are not infrequently observed, that is, torticollis or wry neck. I have been able to collect 9 cases of this complication from the literature (Thost *l. c.*, Bjalik,[24] Weinstein,[25] Neufeld,[26] and Jacques,[27] who declared that he had seen this complication frequently). Most operators can remember cases from their own practice where the operated child had, for several days after the operation, a stiff neck and one very painful on movement or manipulation. Most of these accidents make their appearance in the first two to five days after the operation, accompanied by a moderate rise of temperature. In the cases of Thost, Bjalik and Neufeld the cervical glands were found to be very much swollen and sensitive to pressure. Neufeld explains this complication as due to an infection of the deep-lying cervical lymph glands. Hicguet (*l. c.*), however, is of the opinion that this complication is not always of infectious nature, but is in some measure due to the force used in operating and to the extent that the anterior bodies of the vertebræ and their ligaments have been injured. Most of these cases improve in a period ranging from two days to two months. We cannot, however, consider the case of Preobraschenski[28] as of infectious nature, a case in which the torticollis lasted three years. He thinks it not impossible that during the operation a branch of the N. accessorius to the MM. trapezius and sternocleidomastoideus was injured.

Erysipelas after the operation has been reported by Burack (*l. c.*), and Grunnert and Meier,[29] but in the case of the last-mentioned authors the erysipelas was caused by the fact that the patient visited another patient ill with erysipelas immediately after the operation. Herz[30] reports a case of phlegmon of the neck as a complication of adenoid extirpation.

Post-operative lung infections are also recognized. These infections, however, are not directly dependent upon post-operative infections, but are rather due to the aspiration of blood or lymphoid tissue during the operation. In a case of Brieger's, where he operated after a cautery treatment of the nose and before the complete separation of the eschar, a post-operative pneumonia developed with large numbers of streptococci in the sputum as well as a streptococcic middle ear infection and a mastoiditis. Fallas[31] reports a case in which a lung abscess developed four days after the operation.

Even cases of lethal meningitis have been reported after the

[11] Shurley: Zentralbl. f. Laryngol., xviii, 412.
[12] Schramm: *Ibid.*, xxi, 379.
[13] Parrel: *Ibid.*, xxv, 273.
[14] Coley: *Ibid.*, xxi, 209.
[15] Montengohl: *Ibid.*, xix, 234.
[16] Bernhard: Cited by Kobrak.
[17] Hennebert: Zentralbl. f. Laryngol., xix, 234.
[18] Hicguet: *Ibid.*, xxvii.
[19] Trofinow: Cit. by Nitikin, *ibid.*, xxvii, 210.
[20] Gerber: Personal communication.
[21] Rivière: Zentralbl. f. Laryngol., xvii.
[22] Grönbeck: *Ibid.*, xix.
[23] Thost: (*l. c.*)
[24] Bjalik: Zeitschr. f. Laryngol., iv, 598.
[25] Weinstein: Mediz. Klinik, 1909, No. 19.
[26] Neufeld: Arch. f. Laryngol., xx, 480.
[27] Jacques: Zeitschr. f. Ohrenheilk., xliii.
[28] Preobraschenski: Arch. f. Laryngol., xxiii.
[29] Grunnert and Meier: Arch. f. Ohrenh., xxxviii.
[30] Herz: Zentralbl. f. Laryngol., xix.
[31] Fallas: *Ibid.*, xxv, 28.

so-called simple and non-dangerous adenoid operation. Schönemann[32] and Shurley (*l. c.*) have each reported a case and Putnam[33] has described two such cases from his own practice. Schönemann, however, does not think that his case can be counted in as one of the complications of the adenoid excision, inasmuch as the first symptoms of the meningitis appeared 14 days after the operation. In the meantime the boy had been attending school.

In the preceding remarks I have taken up the following post-operative complications of the adenoid operation, fever, general sepsis, endocarditis, acute rheumatic fever, the acute infectious diseases of childhood, tonsillitis, adenitis, torticollis, lung infections and meningitis, and have pointed out their causal connection with the bacterial content of the nose and naso-pharynx.

Two systems of accessory mucous membrane lined cavities are in fairly close connection with the naso-pharynx, namely, the pneumatic cavities of the ear and the accessory sinuses of the nose. The pneumatic spaces of the ear are brought into direct connection with the naso-pharynx by means of the Eustachian tube and it is a well recognized fact which needs no further comment or statistics that the ear infections belong to the frequent if not the most frequent of the post-operative complications of the adenoid operation and as such are rightly to be feared.

It is not these ear complications that I wish to consider at this time, but rather the post-operative infections of the other series of pneumatic cavities, the accessory sinuses of the nose. The nasal sinuses, however, from the literature, appear to be much less frequently infected after adenotomy than the ear and its appendages. This may be partly explained by the fact that the operative field lies in much closer approximation to the mouth of the Eustachian tube than to the nasal openings of the accessory sinuses. It may also be explained by the fact that the middle ear, as the result of a partial closure of the Eustachian tube by the pressure of the adenoid, and the consequent damming back of its secretions, is rendered a *locus minoris resistentiæ*.

In fact, the post-operative infections of the nasal accessory sinuses have received very little attention in the literature. Burack (*l. c.*) states that sinus suppurations after adenotomy have been observed, but does not give any references. Shurley (*l. c.*) also calls attention to the possibility of such infections without pointing to any particular cases.

Henke[34] described the first definite case of sinus suppuration as a complication of the adenoid operation. His case was that of a 13-year-old girl in Gerber's clinic in whom a severe frontal sinus infection with periostitis, edema of the eyelids and neighboring soft parts, developed two weeks after the adenoid removal. Henke's report of this case was very brief. In the discussion following the presentation of this case Stenger[35] remarked, *er habe drei derartige in Anschluss an Adenotomie entstandene Fälle beobachtet* (he had observed three similar cases following adenotmy).

As far as I can make out these are the only references to sinus involvement after the operation. A description of my two cases follows:

Case I.—October 4, 1910. L. H., 13 years old, referred to-day by her family physician for the removal of adenoids and tonsils. This was done on the same day. The following day the patient reported for observation and as everything looked clean the child was allowed to return home.

October 19. The patient is again brought in by her mother. Has fever and pain in the right ear. The mastoid is moderately sensitive. The lid of the left eye is swollen and there is some ptosis. Severe continuous, non-endurable frontal headache. Mother states that the child had fever as soon as it returned home.

There is pus in the left nose. X-ray examination shows a definite shadow over the left frontal sinus. Temperature, 38.8° C.

October 21. *Operation.*—Incision through the shaved eyebrow. Exposure of the periosteum. Formation of a periosteal bridge, according to Killian, 2 mm. wide. The bone appeared normal. On opening the frontal sinus over the inner end of the eyebrow thin yellow pus under high pressure escapes. Removal of the entire anterior bony wall. Laterally there is a deep recess which is cleaned out. The frontal sinus itself is partially filled with pus and polypoid granulations. Elevation of the periosteum of the orbital roof. Removal of the bony roof of the orbit. Curettage of the naso-frontal duct. The ethmoid cells, being healthy and normal, are left intact. Introduction of a fenestrated rubber drain from the nose. Primary suture of the skin incision. Bacteriological examination of the pus showed hæmolytic streptococci.

October 25. The after treatment proceeded smoothly so that the drain was removed on November 17, and the patient discharged from the clinic. To-day the patient was obliged to return because of pain in the incision and rise of temperature. An incision was made into the scar and some pus was discharged.

December 12. Patient entirely healed and discharged.

Case II.—H. S., 20 years old, complains of obstructed nasal breathing. Examination discloses a slight deviation of the septum, convexity toward the left side, hypertrophy of the right inferior turbinate, and an enlarged pharyngeal tonsil. Also enlarged faucial tonsils.

November 21, 1911. Under local anesthesia removal of the tonsils and adenoids. Not much bleeding.

November 24. The patient is free of pain. The wound surfaces appear to be in good condition but a very small remnant of adenoid tissue is seen to be hanging to the roof of the pharynx just behind the septum. This is not large enough to act as an obstruction to the breathing and for this reason is not removed.

December 7. The patient returns to-day and claims to have taken a cold a few days ago and that she has a discharge of pus from the left side of the nose. Rhinoscopy shows a fluid pus high up in the anterior portion of the middle meatus. The inferior turbinate and the anterior end of the middle turbinate are hyperemic and swollen. Temporary diagnosis, acute sinuitis of the anterior series of sinuses on the left side.

December 18. In the last ten days the patient has been treated in a conservative way with aspirin, menthol inhalations and cocainization of the anterior portion of the middle meatus. Fluid pus is always evident at the anterior end of the middle meatus. The floor of the frontal sinus is not especially sensitive to pressure. Irrigation of the left maxillary sinus is negative. X-ray examination shows a definite localized shadow in the left ethmoid region.

[32] Schönemann: Monatschr. f. Ohrenh., 1907.

[33] Putnam: Zentralbl. f. Laryngol., xxi, 207.

[34] Henke: Verhandl. des Vereins f. wissenschaftl. Heilkunde in Koenigsberg, 1910-1911.

[35] Stenger: *Ibid.*

Definite diagnosis: Suppuration of the left anterior ethmoid cells.

December 20. Pus is still present in the middle meatus. After cocainization the anterior end of the middle turbinate is removed.

December 29. Fluid pus is still present at the upper end of the middle meatus. Small polypi present in the middle meatus are removed. Examination with the fluorescent screen shows a healthy frontal sinus.

January 18, 1912. The nose is now free of pus. The lower turbinate on the left side is still swollen but as the patient has no further symptoms and breathes freely through her nose she is discharged.

RÉSUMÉ.

How can we best interpret these histories? In the first place, both of these infections occurred in the second life decade; in patients 13 and 20 years old respectively, individuals in whom we know that the accessory sinuses have reached a full state of development. In the second place, both of these infections occurred in sinuses which drain into the middle meatus. In the third place, neither of these complications was observed until two or more weeks after operation. In the fourth place, the operation in the second case was inefficiently performed. All of these points, to my mind, are important.

First, as to the age of the patient. Although adenoids are not infrequently removed in adults the great majority of these operations are performed between the years of four and ten, in those years where the sinuses are still in an incomplete state of development. Meyer[36] says, *Die Empyeme der Nebenhöhle kommen fast nur bei Erwachsenen zur Beobachtung* (empyema of the sinuses is seen almost exclusively in adults), and Wertheim,[37] who examined 360 cadavers for diseased sinuses, found the smallest percentage in the first decade and the largest percentage in the second decade of life. This explains, in part, why the sinus infections are among the rarer adenoid operation complications.

Second, both of these infections appeared in sinuses which drain into the middle meatus. How can we best explain this fact? The bacteriological examinations of the nose and the naso-pharynx have shown that these regions are not devoid of their bacterial flora. These microorganisms are usually non-pathogenic or if pathogenic they are of low virulence. The trauma of an operation can so increase the virulence of these organisms that we must count them as pathogenic. Brieger's work (*l. c.*) has shown that the bacteria from the wound surface of the naso-pharynx are driven through the nose by the acts of sneezing and blowing the nose. It is easily conceivable that some of this blood and infectious material can thus be driven into the ostia of the accessory sinuses.

Those sinuses which drain into the middle meatus of the nose are naturally more easily infected than those which drain into the *rima olfactoria,* inasmuch as we know that the current of expiratory air used in sneezing and in blowing the nose does not usually rise above the free edge of the middle turbinate. For this reason the microorganisms of the infected blood and pus more easily reach and infect the frontal and maxillary sinuses and the anterior ethmoid cells than the sphenoidal sinus and the posterior ethmoid cells. Both of the cases cited in this paper have been infections of the anterior series of sinuses. We have, however, too few observations on this point to draw any definite or far-reaching conclusions.

Neither of these infections appeared immediately after operation, but after an interval of about two weeks. This has a very practical bearing for us. We must watch our patients longer after this operation than we have been in the habit of doing.

Finally, we must operate carefully and thoroughly in each case so that no shreads of adenoid tissue remain in the naso-pharynx after operation, for it is easily possible, although I cannot prove it objectively, that in my second case the incomplete operation was the cause of my post-operative infection. Certain it is that these remnants of adenoid tissue which are left in the naso-pharynx are very common causes of post-operative bleeding. Anyone who has closely observed the configuration of the naso-pharynx as shown by the X-ray plate, with a strongly flexed and a strongly extended head will have noted that the body of the atlas so projects into the cavity of the naso-pharynx, when the head is extended, as to form above it on the posterior wall of the naso-pharynx a distinct and deep pouch. It is practically impossible to totally remove the adenoid tissue in the depth of this pouch with the head in the extended position. However, with the head slightly flexed on the chest the posterior wall of the naso-pharynx becomes practically a plane from whose surface the adenoid tissue can be entirely removed. It is for this reason that I always advocate operating with the head of the patient slightly flexed.

In conclusion, how are we best to avoid, as far as possible, the complications of this so-called simple and very frequently performed operation. In the first place it would be well to operate when no local infectious processes were present in the nose, naso-pharynx or ear. We should do well, also, not to operate during local epidemics of the acute infectious diseases of childhood, especially if the patient had come into any sort of contact with children ill of these diseases.

Finally, we all realize that the ideal method of working is to make hospital cases of all these operations and to keep the patients under observation for a considerable period of time. This is practically impossible in all cases, but we can, nevertheless, keep our patients under observation for longer periods of time than is at present customary, especially if these patients are adults. If after two or three weeks no complications appear we can discharge the patients from our care.

In closing, I wish to say, in order not to be in any way misunderstood, that I advise the removal of an adenoid in any patient of any age where the diagnosis of one is made, but at the same time I wish to raise my voice in protest against the careless way in which this operation is so often performed and to call attention to the fact that serious and at times even life endangering complications of this operation are not infrequent.

[36] Schmidt-Meyer: Die Krankheiten der oberen Luftwege, Berlin, 1909.

[37] Wertheim: Cit. by Zarniko, Die Krankheiten der Nase und Nasenrachens, Berlin, 1910.

THE TRANSPLANTATION OF RIB CARTILAGE INTO PEDUNCULATED SKIN FLAPS. AN EXPERIMENTAL STUDY.[1]

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INTRODUCTION.

The repair of mutilations or defects, such as those which involve the ears or nose, is attended with considerable difficulty.

In the treatment of such deformities it is often requisite to use flaps of tissue with skin on both sides. These flaps can be secured by one method or another, but it seems to me that the factor of chief importance is to provide a framework to support the flap which will secure the desired contour, and at the same time prevent shrinkage.

Many materials have been used for these supports, such as silver, gold, rubber, celluloid, etc., but all of them have the disadvantage of being foreign bodies.

A material is required which will not act as a foreign body; is easily obtainable; is rigid enough for the purpose, and at the same time can be shaped as desired.

In seeking for some suitable tissue in the body which would fulfil these conditions, I was led to undertake the experiments with costal cartilage which are outlined below.

Twenty-four experiments were carried out on 15 dogs. Animals between three months and two years old were used. Ether anesthesia was used in each experiment.

Technic.—The part was shaved, washed with green soap and water followed by alcohol, and then with ether. After the skin was thoroughly dry it was painted with tincture of iodin, 2.5 per cent. The iodin solution was also freely used in the open wounds and after suture of the skin. Fine black silk was the ligature and suture material used throughout.

In order to produce conditions of nutrition which would be similar to those in which the framework would be placed in actual clinical practice, I determined to transplant the cartilage into pedunculated skin flaps (Fig. 1).

A flap of the required size with either a broad or narrow base was outlined, and raised from its bed. It was then folded on itself, raw surface to raw surface, so that there *was skin on both sides.* The edges were held together with several sutures. In this way a sort of pouch was formed and into a selected portion of this pouch the cartilage was placed and secured.

The long flaps, with narrow bases, were dressed with gauze moistened with normal salt solution, and each was protected from pressure by a moulded wire cage which was secured by a bandage. The short flaps, with broad bases, were in a number of instances exposed to the air without dressings.

SOURCE OF CARTILAGE AND POSITION IN FLAP AFTER TRANSPLANTATION.

The cartilage was obtained from the cartilaginous ribs. The perichondrium was not disturbed except where shaping was done.

The cartilage was either imbedded in a thin layer of subcutaneous fat, or was placed in a pocket burrowed in the subcutaneous tissue itself, or was surrounded by the skin after the subcutaneous tissue had been removed.

The location of the cartilage varied in the different flaps. In some it was placed parallel to the base of the flap, either in the distal, intermediate, or proximal portions. In others, it was placed vertically to the base, and in different parts of the flap. In still others it was placed diagonally across the flap.

The shape of the cartilage varied. In some of the experiments it was inserted in its natural shape, and in others it was cut and moulded into the desired form.

TYPES OF FLAPS.

The flaps when completed were either appendix-shaped, square, or rectangular, some of the latter having a broad and some a narrow base.

The completed appendix-shaped flaps were from 1 to 2 centimeters in diameter, and from 2.5 to 5 centimeters long. There was drying out of the skin, due to lack of blood supply, of from 1 to 1.5 centimeters of the tip of these flaps, when over 3.5 centimeters long. If the dried out skin was trimmed and the cartilage cut down slightly below it, the raw end would heal in a short time.

The bases of the finished square and rectangular flaps varied between 2 and 7 centimeters, and the length between 3 and 6 centimeters.

Some of the flaps were made with a curved border which was supported by a curved piece of cartilage.

The laxity of the skin made it possible to close immediately all of the defects left by raising the flaps.

REMARKS.

Pieces of cartilage from 1.5 to 7 centimeters in length were used. The cartilage was allowed to remain in the flaps from 7 to 120 days.

In two instances where infection occurred the wounds were quickly brought into healthy condition, and the cartilage

[1] There are several reports on the clinical use of rib cartilage in the plastic repair of defects of the nose, and for the relief of laryngeal stenosis. In one instance rib cartilage was transplanted into an ankylosed elbow joint with some success. F. von Mangoldt: Archiv f. klin. Chir., 1899, p. 926; Verhandl. d. Deutsch. Gesellsch. f. Chir., 1900, p. 460. Nélaton and Ombrédanne: La Rhinoplastie, 1904, S. 188, 284. A. Henle: Zentralbl. f. Chir., 1904, p. 1333; Mitteil. a. d. Grenzgebiet d. Med. u. Chir., 1907, III, p. 161. Wegalowski: Zentralbl. f. Chir., 1907, p. 449. J. F. Binnie: Trans. Am. Surg. Asso., 1908, p. 379.

FIG. 1.—Pedunculated flaps of different shapes containing transplanted cartilage. On removal of the cartilage the measurements were the same as at the time of transplantation, and there was no sign of degeneration. Note normal growth of hair on flaps.

FIG. 3.—Cartilage shaped to form angle and also in ¾ circle. Operation, November 21, 1910. Specimen removed, January 24, 1911. The cartilage is firmly healed in its new shape. Microscopic examination showed no signs of degeneration.

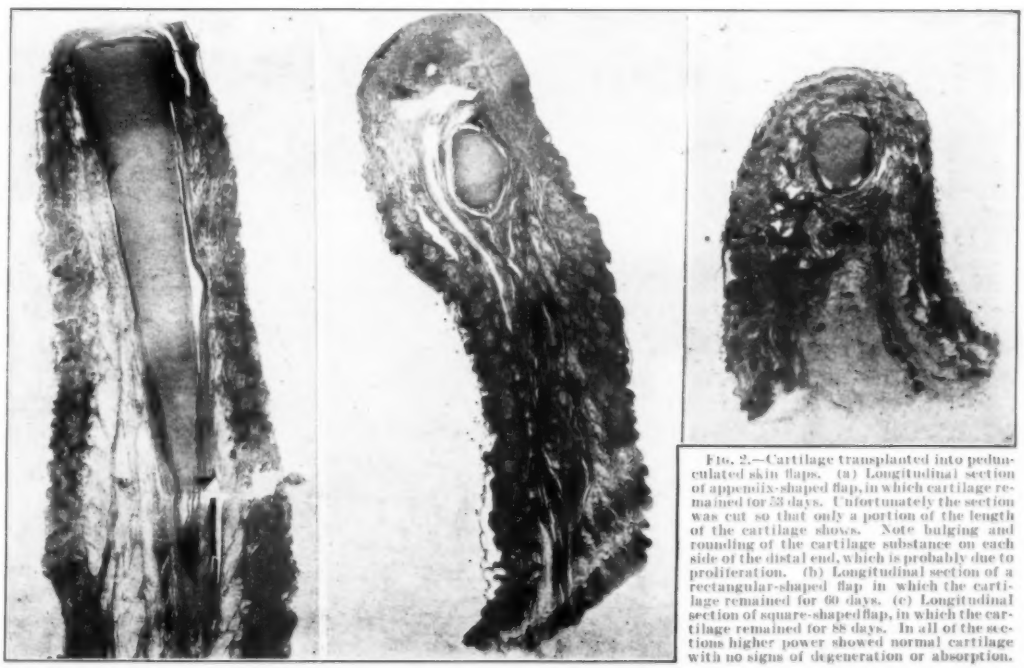

FIG. 2.—Cartilage transplanted into pedunculated skin flaps. (a) Longitudinal section of appendix-shaped flap, in which cartilage remained for 53 days. Unfortunately the section was cut so that only a portion of the length of the cartilage shows. Note bulging and rounding of the cartilage substance on each side of the distal end, which is probably due to proliferation. (b) Longitudinal section of a rectangular-shaped flap in which the cartilage remained for 60 days. (c) Longitudinal section of square-shaped flap, in which the cartilage remained for 88 days. In all of the sections higher power showed normal cartilage with no signs of degeneration or absorption.

saved, by the free use of tincture of iodin. In one experiment the cartilage was accidentally contaminated before transplantation, but after being dipped in the iodin solution it was placed in the flap, and per primam healing followed.

The appendix-shaped flaps containing cartilage, which were long and had comparatively narrow bases, were the least likely to be completely successful. The broad-based flaps, on the other hand, were nearly always successful throughout.

In several instances the cartilage transplanted in the flaps was obtained from other dogs, and these pieces were apparently as well nourished and gave as satisfactory results as those from the same animal.

The cartilage should be securely, but loosely, anchored in position. If there was pressure on any particular portion of the cartilage, as for instance by a tightly drawn suture, there was usually slight liquefaction and subsequent fracture of the cartilage at that point.

Macroscopic examination showed in every instance that the squarely cut ends of the transplanted cartilage had become slightly rounded. The healing was reactionless and the cartilage did not act as a foreign body.

The measurements of the cartilage when removed from the flap differed very little, if at all, from those taken at the time of transplantation.

On section the cartilage appeared normal and seemed well nourished (Fig. 2).

Microscopic examination showed the transplanted cartilage surrounded by a loose connective tissue zone containing blood vessels, which were more or less abundant, according to the length of time after transplantation. The cartilage cells appeared normal and there were no signs of degeneration or absorption.[3]

This series of experiments show that cartilage with its perichondrium may be successfully transplanted into flaps of the desired shape, with skin on both sides, so long as the pedicle supply is sufficient to nourish the flaps. The cartilage may also be cut and moulded into any required form to support the flap (Fig. 3).

[3] I take this opportunity of thanking Dr. C. D. Deming for assistance in the histological examinations.

Conclusions.

From the results obtained in these experiments and from clinical experience, I feel sure that the transplantation of rib cartilage into skin flaps is a safe and promising procedure. Cartilage can be used with advantage in otoplasty, in the restorative operations made necessary by traumatism and disease. In microtia also much can be done, by the transference of a flap thus supported, in improving the condition due to arrested development. In rhinoplasty the cartilage support can be placed in a double-faced skin flap, from a distant part when it is formed, or can be inserted after the flap is in its new position. It is especially advantageous in the correction of saddle nose.[2]

As to the fate of the transplanted cartilage in these experiments, as far as can be seen the cartilage lives, is properly nourished and does not act as a foreign body. There has been no increase in length in any of the pieces transplanted.[4]

There is practically no absorption and there are no signs of degeneration, either macroscopically or microscopically. The cartilage shrinks very little, if any, up to four months, which is the longest period in the series, and it seems reasonable to believe that it will continue to be nourished and will live and act as a support as long as needed.

[2] In a case of my own, a strip of costal cartilage used for the correction of a saddle nose has remained intact for over two years. Bits of bone from the tibia, ribs and skull have been successfully used in the correction of saddle nose, and in rhinoplasty, but bone lacks plasticity, and on this account cannot always be used in reconstructive work.

[4] My results as to the fate of the transplanted cartilage do not coincide with those of Leopold (Arch. f. path. Anat. u. Physiologie, 1881, LXXXV, 310), and Zahn (cited by von Mangoldt, Verhandl. d. Deutsch. Gesellsch. f. Chir., 1899, p. 613). These authors transplanted experimentally very small slices of cartilage with its perichondrium, and found that adult cartilage degenerated and was absorbed. Von Mangoldt, on the other hand, found both clinically and experimentally that larger pieces of transplanted cartilage remained intact and were properly nourished.

DENGUE, ITS HISTORY, SYMPTOMATOLOGY AND EPIDEMIOLOGY.*

By Dr. E. R. Stitt,
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It is a remarkable fact that a disease so striking in its tendency to appear in wide-spread epidemics and with so characteristic a symptomatology should not have been reported until about 1780 and then almost simultaneously by Gaberti in Egypt, Bylon in Batavia, Rush in Philadelphia and a year of two later by Cubillas in Spain.

While Hirsch (Handbook of Geographical and Historical Pathology) gives the credit for the first mention of the disease to the chronicler Gaberti, who describes a disease with certain resemblances to dengue as existing in Cairo in 1779, yet, for the reason that certain clinical features of this epidemic would hardly appear to belong to dengue, as we now know it, there would seem to be good ground upon which to give the credit of priority to our great American physician and statesman, Benjamin Rush, who, under the designation break-bone fever, gave us a true picture of dengue as it manifested itself in Philadelphia in 1780.

Gaberti was particularly impressed with the knee involve-

* Paper read at a meeting of The Johns Hopkins Hospital Medical Society, February 3, 1913.

ment so that from his description the disease was known as the disease of the knees. He further noted swelling of the fingers and that the pains continued for more than a month. The sudden onset and the sweating would seem to belong to relapsing fever as well as to dengue and in support of the view that the disease described by Gaberti might have been relapsing fever we have the statement of Sandwith (Medical Diseases of Egypt) that bone pain, chiefly of the knee, is the symptom most complained of by the Egyptian native with relapsing fever.

Bylon, who reported an outbreak of an epidemic disease in Batavia in 1780, stated that everybody was attacked and that the symptoms were almost the same as those ushering in plague—headache, lassitude and pains in the joints. He noted, however, that this epidemic had no bad consequences, patients getting rid of it in three days under moderate diet and copious beverages.

Rush (Medical Inquiries and Observations, Philadelphia, 1789), in a chapter describing a bilious remitting fever, states that it first appeared in July and August, 1780.

Abstracting his description we note that hardly a family escaped and in many families scarcely a member. All ages were affected. The fever came on in different ways—in some a giddiness of the head marked the onset which attacked so suddenly as to produce even symptoms of apoplexy. It was a great surprise to Rush that persons so affected got well in two or three days. In some cases the onset came with delirium. The pain was exquisitely severe in the head, back and limbs. Pain in the forehead at times only occupied the eyeballs. In some cases the pains in the back and hips were so acute that the patient could not lie in bed. They all complained especially of soreness in the seats of their pains, particularly when in the eyeballs. The disease was thought by many to be a rheumatism, but its general name among all classes was breakbone fever. Nausea was common and in some instances vomiting occurred. There was a very disagreeable taste in the mouth. The exacerbations were more severe every other day. Relapses were frequent. A rash appeared on the third or fourth day which proved favorable. It was often accompanied by a burning of the palms of the hands and soles of the feet. Some who were not even confined to bed had these skin efflorescences. In some cases there were swellings under the jaw and about the ears. Discharges of blood from the nose frequently accompanied the fall of the fever on the third or fourth day while in others a profuse hæmorrhage from the nose or bowels about the eleventh day preceded a fatal issue. When the fever did not terminate on the third or fourth day it frequently ran on to the fourteenth or even the twentieth day with symptoms of typhus gravior. In some cases the fever was followed by jaundice. The fever declined in October when the weather became cool.

For treatment Rush recommended first a gentle vomit of tartar emetic which if given at the onset produced a crisis on the third or fourth day. If only nausea resulted he repeated the dose with the happiest effect. Salts and cream of tartar were given to open the bowels. After evacuating the stomach and bowels he gave small doses of tartar emetic mixed with Glauber salts. Rest in bed was recommended as it favored the eruption of the rash. Persons who struggled against the fever, trying to shake it off by labor or exercise, had a slow recovery. He gave bark about the third or fourth day and if the fever continued beyond the fourth day he used blisters to the neck and behind the ears.

As the fever was sometimes accompanied by symptoms of dysentery opium was very beneficial after the necessary evacuations had been made. As the pulse was never hard, but only full, Rush never had recourse to bleeding. Many other physicians practised bleeding and he notes in this connection "I am bound to declare that I heard of several cases in which bleeding was followed by a fatal termination of the disease."

Most of those who recovered complained of nausea and loss of appetite with a bitter taste in the mouth. Faintness, especially upon sitting up in bed, was often noticed. The most remarkable symptom during convalescence was an uncommon dejection of spirits.

When we analyze this description by Rush it must be immediately apparent to every one that cases of typhoid fever (hæmorrhage from the bowels about the eleventh day), malarial fever (the exacerbations were more severe every other day), probably yellow fever (in several cases the fever was followed by a jaundice) and dysentery (the fever was sometimes accompanied by symptoms of dysentery) were confused with dengue, yet it is remarkable that notwithstanding this fact we should be given such a clear picture of the most striking features of the disease under consideration.

As I have seen the disease it would appear to me to be best outlined as follows:

I. A disease of strikingly sudden onset with rapidly rising temperature. Prodromata practically absent.

II. Very marked soreness deeply seated about the place of origin of the ocular muscles so that every movement of the eyeballs is at once complained of as giving pain.

III. General pains all over the body, more especially of the back and about tendinous insertions of the muscles which cause the pains to be referred to the joints. The rachialgia may be as great as that in variola or yellow fever.

IV. Fall of the fever about the third or fourth day which is often attended by a critical epistaxis, sweat or diarrhœa, to be succeeded by an intermission of from one to three days of a feeling of well being. About this time or with the secondary rise of fever the true dengue rash appears. This is at first noted about the bases of the thumbs and extending over the dorsal surfaces of the wrists. Almost simultaneously a measles-like rash appears over the dorsal and internal surfaces of the big toe extending to the ankle, especially over the internal malleolus. Later on the elbows and knees may be involved or the rash may cover thickly the entire body. A carmine flush of the palms of the hands and soles of the feet is not uncommon. The so-called primary eruption is nothing more than an initial flushing of the face.

V. About the third day a marked slowing of the pulse is

noted which may in the second accession of pyrexia be as low as forty-five beats per minute.

VI. There is a profound loss of appetite, interest and energy. These manifestations tend to extend well into convalescence. Insomnia or rather an inability to sleep for any extended period is often a marked feature of the disease. One dozes but does not sleep.

VII. There are no changes in the urinary findings which could be attributed to the disease.

VIII. Very characteristic is the blood picture, which may be well exhibited even by the second day. In one hundred cases in which I very carefully studied the blood the average leucocyte count was three thousand two hundred per cubic millimeter with a polymorphonuclear percentage of fifty-one. My lowest white count in this series was one thousand seven hundred and the lowest polymorphonuclear percentage twenty-nine. These results were obtained during a recent tour of duty in the Philippines. During a former tour I obtained lower results, but do not feel justified in attaching the same confidence to them as to those given above. These one hundred counts were made with a method in which the total count and the differential count were made in the same preparation. A one to twenty dilution of blood was made with 1½ per cent of formalin in ½ per cent glycerin in distilled water to which diluent had been added one drop of Giemsa's stock solution for every cubic centimeter. The formalin (40 per cent formaldehyd) should have a reading of plus one to phenolphthalein.

It had been my opinion formerly that the differential count other than that of the polymorphonuclears was of diagnostic value. I am now convinced that the type of leucocyte making up the percentage not taken up by the polymorphonuclears is inconstant, there being at times an increase in lymphocytes while again the increase may be in the large mononuclears and transitionals.

A few months ago my attention was called to the rather marked leucopenia and low differential count of the polymorphonuclears in the blood examination of a case of undetermined fever in a lady living in Washington. I telephoned her attending physician asking him if the patient had been recently out of Washington. He gave the information that she had come up from Florida only a few days previously. I then asked whether she complained of an intense soreness at the back of the eyeballs, next as to the presence of an unusually slow pulse and then as to an eruption. The answers to the first two questions were in the affirmative, but to the last negative. I then requested him to look for an eruption commencing about the dorso-lateral surfaces of the thumbs and great toes. Two days later the eruption appeared confirming my suspicions.

This case was thought by her physician to be one of influenza and it is in the blood count and slow pulse that we have our best points of differential diagnosis. Sandwith notes the value of the slow pulse in differentiating the two diseases in Egypt.

At the present time with a railroad trip of only two days separating us from Key West it will be appreciated how easy it would be for dengue cases to appear in the practice of the physicians of the North.

There have recently appeared many articles dealing with the question of the differentiation of dengue and various other dengue-like fevers such as phlebotomus fever, three-day fever, seven-day fever, sand-fly fever, etc., and, in many of these, great importance is attached to the characteristic of a slow pulse in them as compared with the more rapid pulse of dengue. This is an error, as I was more impressed by the constancy of the slow pulse in dengue than by any other symptom. In this connection it is remarkable that Rush makes no mention of a slow pulse in dengue because in his book on yellow fever (An Account of the Bilious Remitting Yellow Fever, 1794) the symptom which most attracted his attention was the slow pulse. In discussing at length the peculiarities of the pulse of yellow fever he states that he at first thought it due to some affection of the brain, but later ascribed it to a spasmodic affection accompanied with preternatural dilatation or contraction of the heart. Rush termed this pulse the indescribable or sulky pulse. He notes that it was present even in the very mild cases and he states that it was so familiar to him that he could have distinguished the disease without seeing the patient. It is remarkable that Touatre in his book on yellow fever should state that while physicians had observed the slowing of the pulse in yellow fever yet none understood its diagnostic value until Faget promulgated the law of the falling pulse.

Just here it may be noted that the most important consideration in connection with dengue is its differentiation from yellow fever. This differentiation rests best in:

(1) The normal urine of dengue and the albuminuria of yellow fever.

(2) The striking blood picture of leucopenia and marked diminution in polymorphonuclear percentage of dengue with normal findings in yellow fever.

(3) The jaundice appearing about the third day in yellow fever and the characteristic eruption in dengue showing itself from the third to the fifth day.

Many of the English authorities in India have drawn attention to the susceptibility of kala azar patients to intercurrent affections, and this they attribute to the marked leucopenia of kala azar. Of course with the much shorter duration of the period of leucopenia in dengue there would be less liability to bacterial infection, but in my opinion this possibility should not be lost sight of.

A vigorous man, a corporal in the U. S. Marine Corps, had an attack of dengue while suffering from an impetiginous staphylococcic infection. The fever continuing the man was sent to Canacao hospital, where he was found to have a positive blood culture for *Staphylococcus pyogenes aureus*. Fifteen days from the onset of the dengue the man died and at the autopsy numerous miliary abscesses were found in kidneys, spleen and liver. It would seem reasonable to consider that the lowering of the phagocytic forces enabled the local staphylococcic infection to become generalized.

It is possible that this susceptibility to infection may explain the occasional appearance of enlarged glands in dengue, infections from tonsils causing glandular enlargement. As a matter of personal observation I can state that I have very rarely noticed any glandular enlargements in dengue and this notwithstanding careful search in order to verify this finding, which is rather prominently brought out by some authorities.

Two of the most characteristic features of dengue were noted by Rush, viz.: the uncommon dejection of spirits and the slow recovery of those who struggled against the fever. It is a matter of common comment that the most frivolous person considers life a heavy burden during an attack of dengue—that the optimist becomes a rank pessimist. I can vouch for the statement that the only pleasure left to the dengue patient is the pleasure of solitude, there having been nothing I so desired while suffering from this disease as to be let alone. One of our naval officers suggested that an efficient method of ridding the service of practical jokers would be to furnish the dengue patients with large caliber revolvers and then persuade the jokers to have fun at the expense of the poor miserable dejected creatures.

The best proof of Rush's statement that struggling against the disease leads to a protracted convalescence is furnished by the experience of those on board the French ship *Cher* at the time of her being wrecked in New Caledonia, January 6, 1884. The accounts tell us that those who were in the first days of the disease did not want to be disturbed—they objected to being rescued. Others, however, who were recovering lent valuable assistance in the rescue work, but suffered, as a result, from a most protracted convalescence, some of them not having recovered their health two months later.

As regards the epidemiology of dengue there seems to be a general acceptance of the idea that dengue is transmitted by the common culicine mosquito of the tropics, *Culex fatigans*. There is not, however, that definiteness which attaches to the transmission of yellow fever by *Stegomyia calopus* or to pappataci fever by *Phlebotomus papatasii*, in both of which a certain period of development of the unknown filterable virus in the arthropod host is necessary before the insects become capable of transmitting the infections. It will be remembered that in the nine experiments as to dengue transmission, conducted by Ashburn and Craig, the authors threw out five of the cases for such reasons as previous immunity or refusal of the experimental mosquitoes to bite. Of the four remaining volunteers only one developed dengue. This man, however, had been on duty at the Division Hospital and the statement is made that he had not been exposed to the disease so far as could be determined. This of course rather militates against the value of this isolated experiment and furthermore the mosquitoes which bit him had fed on the blood of a dengue patient only two nights previously. If this is to be considered as a valid experiment, we must believe that only a short sojourn of the virus in the mosquito is requisite, which is rather at variance with the eleven days for the yellow fever virus and eight days for that of pappataci fever.

As regards the transmission of the disease by blood filtered through a diatomaceous filter it will be remembered that Ashburn and Craig, by proving this fact, placed the dengue virus in the same category with the filterable viruses of the two diseases just considered (Philippine Journal of Science, May, 1907). It should be stated that Doerr's report on pappataci fever was subsequent to that of Ashburn and Craig (Berlin Klin. Woch., 1908, No. 41).

Graham in Beirut carried out some experiments, one of which would seem to almost positively demonstrate mosquito transmission. He took mosquitoes which had fed on dengue patients, to a village in the mountains where no case of dengue existed. He caused these mosquitoes to feed on two natives of the village and both men became sick with dengue four and five days respectively after being bitten by the mosquitoes. Graham's claims to have noted piroplasma-like organisms in dengue blood have not been verified and do not receive credence (J. Trop. Med., July 1, 1903).

The most convincing evidence as to mosquito transmission of dengue is that afforded by the absence of dengue in Port Said during the years 1906 and 1907 notwithstanding the prevalence of the disease in adjacent parts of Egypt. This was attributed to the absence of mosquitoes, these having been destroyed in the fight to make Port Said malaria free. This campaign was commenced in May, 1906 (Ross: Ann. Trop. Med. and Parasitol., 1908, 11, 193).

While in the Philippines in 1905-1906 I was struck with the fact that when there were no mosquitoes about the hospital reservation there were no cross infections with dengue among the other and non-immune patients in the same ward. After the onset of the rainy season, however, mosquitoes became abundant and in all probability became infected and subsequently transferred the infection.

At this time I examined many hundreds of the mosquitoes present on our reservation and noted the presence of *Myzomyia ludlowii*, *Stegomyia scutellaris* and but one species of the genus Culex, *C. microannulatus*. The determination of the species was made by Prof. Banks, the entomologist of the Bureau of Science. I was not able at that time to find a single specimen of *Culex fatigans*.

In 1909 I returned to the Philippines and a few days after my arrival an officer who had been operated on for appendicitis suddenly developed a temperature. The blood findings reassured us from a surgical standpoint and by the third day of his fever the case was positively recognized as dengue. At the U. S. Naval Hospital, Canacao, P. I., there are two bungalow-type wards for sick officers. At the time I refer to one ward was perfectly screened, the second less satisfactorily. It was in this building that the case referred to above occurred. Three more similar cases occurring within a few weeks I had this building put out of commission and fumigated with sulphur. During the subsequent two years I remained at Canacao no further cases developed in this building, although dengue cases sent to the hospital from the station and ships were frequently under treatment in it.

In the hospital proper there are four large wards, each ward

thoroughly screened and in the two medical wards there are small wire-screened rooms or cages in which any case suspected of being malaria or dengue is immediately placed upon admission to the hospital. It is improbable that a mosquito can gain access to the main ward and almost an impossibility for such insects to effect an entrance into the wire screen cage. Each of these compartments could accommodate nine beds. During the two years I followed this experiment, although more than 200 dengue patients were under treatment in these cages, there were no instances of infection of those lying in the open ward and only separated from the dengue patients by the wire screen.

PROCEEDINGS OF SOCIETIES.

THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

December 2, 1912.

Case of Friedreich's Ataxia. DR. H. M. THOMAS.

Dr. Thomas presented a case of Friedreich's ataxia from Dr. Barker's service. (Hospital No. 86096.) The history in short is as follows:

The patient is a young woman, 23 years old, who comes from a town in Maryland. No similar trouble has occurred in the family. Father is alive and well; mother died at 22 from dropsy. The parents were not related. There were no other children by that marriage. By the father's second marriage there are three half brothers and four half sisters. None of them have shown any sign of the trouble, and no such trouble is known in the patient's cousins or other relations. Tuberculosis has, however, occurred frequently in the mother's family.

The patient herself seems to have been a fairly healthy child; at least nothing was noticed until she was ten years old, when she had a low fever for a week or two. Directly after this her walk is said to have been extremely bad; in fact, it is stated that she had to learn to walk over again. After this her walk was never quite right, and for a number of years has gradually become worse. The patient herself, however, does not think there was very much wrong with it. She was able to walk to school. For the last three or four years it has been getting much worse, for the last year she has been unable to walk without some support, and for the last few months she has been confined to her bed. She has had no pain or other discomfort. She herself has noticed no particular change in her voice, and does not know when her feet began to become deformed.

In presenting the case, Dr. Thomas called attention to some of the salient points.

She is a small, rather poorly developed young woman. Her intelligence is practically normal. She is emotional, but is, as a rule, in a happy, contented frame of mind. Her voice is hesitating, somewhat indistinct and jerky.

The optic nerves are normal. The pupils react normally to light and contract during accommodation. In looking forward there is no nystagmus, but this occurs when the eyes are directed either to the right or the left. It is not of high grade. The other cranial nerves act normally.

When the patient sits with the back unsupported, one sees a constant, wobbling insecurity. This is perhaps most marked in the head.

The movements of the arms show the same static ataxia. Muscular strength in arms is not materially affected. There is no local muscular atrophy. Sensation is normal. The triceps and biceps reflexes are not obtained.

The patient is entirely unable to stand alone, and when supported the irregular swaying of the body becomes pronounced.

The muscular strength of the legs is somewhat reduced, particularly the muscles moving the ankles. The legs are thin, and the feet are in a characteristic position. The arch of the foot is increased; the great toe is in constant dorsal flexion. Movements of the legs show ataxia. The knee jerks and ankle jerks are absent.

Sensation is, as a rule, not disturbed, although on the outer side of the right leg there is an area in which the responses are not as accurate as elsewhere. The sense of position of the joints is only slightly affected, and this in the small joints of the feet.

Plantar stimulation in both feet gives a definite increase in the already dorsally flexed great toes. This can also be brought about by descending tibial irritation.

The abdominal reflexes are active on both sides. There is a slight lateral curvature of the back.

The case presents a combination of symptoms that are considered characteristic of Friedreich's ataxia—the disturbed speech, nystagmus, static ataxia, great disturbance in walking, the characteristic deformity of the feet, slight lateral curvature, the absence of the deep reflexes with positive Babinski phenomena, slight sensory changes, and the retention of the abdominal reflexes.

The synonym, hereditary ataxia, is not applicable in this case, and, indeed, in Dr. Thomas' experience this has been true of most of the other cases seen in the Johns Hopkins Hospital. He knows of only one typical family in Maryland.

December 2, 1912.

Some Recent Work on Measles and Typhus Fever. DR. JOHN F. ANDERSON. (*Washington, D. C.: U. S. Public Health Service.*)

Our knowledge of the etiology of infectious diseases has advanced, not uniformly, but by leaps and bounds as new methods have been developed and new incentives have arisen.

With the evolution of a bacteriological technic, led by Pasteur and Koch, there was a rapid expansion in our knowledge of bacterial infections. The discovery that Texas fever of cattle was transmitted by the tick started extensive studies in the relation of insects to the transmission of disease. The demonstration that certain diseases are due to ultramicroscopic

organisms—so called "filterable viruses"—rapidly led to a study of many diseases of obscure etiology and cleared away much of the confusion regarding them.

Again, great epidemics have furnished the incentive for the most exhaustive study of some of our essentially epidemic diseases, as cholera, plague, influenza, meningitis, and poliomyelitis.

While very recent years have seen great advance in our knowledge of the phenomena of disease, and in our understanding of its physiology, there was a period not long since in which little was done to advance our knowledge of some important infectious diseases endemic almost throughout the civilized world, and research workers realize that new methods or agencies must be employed.

As a result of the use of certain methods or agencies of research, the value of which had not previously been generally recognized or employed, there has been in recent years a great increase in our knowledge of this class of diseases.

Along with these advances of our knowledge of those diseases considered for years as infectious has come the discovery that certain diseases formerly thought not to be communicable do, after all, belong to the infectious class. I refer especially to poliomyelitis, which for years was considered to be a degenerative disease of the nervous system and which recent researches have proved to belong among the infectious diseases.

The use of the monkey as an experimental animal, instead of the lower animals usually employed, has contributed more than any other factor to the important recent additions to our knowledge of the acute infections. Recent work has shown that the monkey is susceptible to a number of diseases that affect men and which are not readily transmissible or not at all to the small laboratory animals, such as rabbits, rats, and guinea pigs. We have thus been able to reproduce these diseases and to study them under laboratory conditions.

Another important advance was in the adoption of methods of experiment by which the infective material was introduced into the body so that it was brought into immediate contact with the organs or tissues primarily and most seriously affected in the natural disease, as in experimental meningitis and poliomyelitis, where the infective material is put directly into the cranial or spinal cavities.

Other factors of value have been the recognition of the fact that the same disease may present a very different clinical picture in one species as compared with another, even to a difference in post-mortem findings, and yet be due to the same etiological agent. Filtration through earthenware filters, by means of which contaminating organisms are removed; greater experience in interpreting results; the training and development of men for research; the foundation and endowment of institutions for research; all have contributed to what we know of the communicable diseases.

After this somewhat general discussion of the factors contributing to advances in our knowledge of the communicable diseases, I shall now discuss briefly some recent work on measles and typhus fever, especially that done by Dr. Joseph Goldberger and myself.

Measles.—Measles may be said to be practically a world-wide disease, one that is always endemic and often epidemic, especially in our larger cities. But in spite of the fearful toll in deaths that it yearly exacts, the large number of persons incapacitated for varying periods by illness, and the serious complications and sequelæ, measles is too often regarded by physician and the laity as a necessary incident of childhood. The disease was the cause of 44,080 deaths in the registration area of the United States during the period 1900 to 1910. Its importance as compared with certain other diseases in the registration area during 1910 is shown in the following table:

DEATHS IN REGISTRATION AREA OF THE UNITED STATES IN 1910.

Disease	No. of Deaths	Deaths per 100,000
Diphtheria and croup	11,512	21.4
Measles	6,598	12.3
Scarlet fever	6,255	11.6
Whooping cough	6,146	11.4
Cerebrospinal meningitis	2,272	4.2
Infantile paralysis	1,459	2.7

While it has been quite the general belief among clinicians for years that the infective agent of measles is contained in the blood, in the nasal and buccal secretions, and perhaps in the "scales," the experimental data in support of this belief previous to 1911 were very incomplete.

Last year the work of Anderson and Goldberger on measles converted what had previously been opinions based on clinical observations into proven facts based on laboratory experiments. These authors showed that the monkey was susceptible to infection with measles by inoculation with blood from human cases of the disease. They showed that the apparent insusceptibility of the monkey to infection with measles was largely due to a limitation of the period of infectivity of the blood to the very early stage of the disease, before or shortly after the appearance of the eruption. Thirty-six hours after the first appearance of the eruption the infectivity of the blood for the monkey becomes greatly lessened and rapidly decreases. Studies on the nature of the virus as it exists in the circulating blood showed that the infective agent is capable in a certain proportion of cases of passing through a Berkefeld filter and therefore is included among the filterable viruses.

The virus resists drying for 24 hours, freezing for the same length of time, and is destroyed by heating at 55° C. for 15 minutes. Well monkeys, when placed in the cage with sick monkeys during the early stages of the disease, contracted measles after an incubation period of 5 to 11 days.

Experiments made to test the infectivity of the nasal and buccal secretions from human cases of measles showed that such secretions, collected within the first forty-eight hours after the appearance of the eruption, were infective for monkeys by subcutaneous inoculation; this would correspond to about the fourth and sixth days of the disease.

Experiments made to determine the duration of the infectivity of these secretions strongly suggested a reduction, if not a total loss of their infectivity with the approach of convalescence. Attempts were made without success to demonstrate

the presence of the infective agent of measles in the "scales" collected from human cases of the disease from 4 to 7 days after the appearance of the eruption.

Since the work of Anderson and Goldberger was reported, three papers by different workers have been published corroborating their results as to the presence of the virus in the blood of human cases and the susceptibility of the monkey to measles. Hektoen and Eggers, while chiefly concerned in their work on experimental measles in the monkey with a study of the leucocytes, state that the general results of their experiments agree very well with those reported by Anderson and Goldberger.

Nicolle and Conseil have reported the infection of the bonnet monkey with measles by the inoculation of blood drawn 24 hours before the appearance of the eruption. And more recently Lucas and Prizer have reported the observation of Koplik spots in monkeys experimentally infected with measles.

The results of these studies on measles give us our first definite information based on carefully controlled laboratory experiments as to the seat of the virus, its means of exit from the body and the probable avenue of infection. The experimental observations on the duration of infectivity of the secretions are in accord with previous clinical observations that cases of the disease are as a rule not infective after convalescence is well established. The great importance of this point and the further one as to the non-infectivity of the "scales" from a public health aspect can be readily appreciated.

Typhus Fever.—The last appearance of typhus fever in the United States in epidemic form was in New York in 1891-92. Since then, except for an occasional case at some of our large seaports, it was believed that the disease had been eradicated from this country.

It has been a subject of wonder to health authorities that, in spite of the occasional arrival in this country of immigrants sick with typhus and of many persons from endemic foci of the disease, typhus fever apparently did not gain a foothold in the United States. That this had already taken place has recently been shown through the demonstration by Goldberger and Anderson in the Hygienic Laboratory, U. S. Public Health Service, that a disease observed and studied in New York City by Dr. Nathan E. Brill is identical with typhus.

As far back as 1896 Brill began to notice from time to time among his typhoid cases types that were distinguishable from typhoid and paratyphoid fevers because of the short duration of the fever, the presence of a distinctive eruption and the absence of specific agglutination reactions. He continued his observations on this type of fever and published two papers based on the study of 255 cases observed up to December, 1910.

About the time that Dr. Brill's second paper appeared, Dr. Goldberger and I were engaged in the study of the typhus fever of Mexico and, having the picture of that disease clearly in mind, we were struck by the very marked clinical resemblance between it and the disease described by Brill. Influenced by this resemblance, we endeavored to determine, if possible, the relationship between that infection and typhus fever.

Our efforts to do this were not successful until September, 1911, when we saw a well-marked case of Brill's disease in the wards of Mount Sinai Hospital, New York. Blood drawn from the arm vein of this patient was used for the inoculation of monkeys, one of which, 9 days after inoculation, developed a fever which reached its maximum 6 days later. The fever lasted 11 days, when it terminated by rapid lysis.

Blood was drawn from this animal at the height of its fever and successfully used for the innoculation of other monkeys.

Monkeys that have recovered from one attack are immune to subsequent infection. Since then the infection has been carried through 22 monkey generations by inoculation of blood, and is now being continued through guinea pigs.

Having established the susceptibility of the rhesus monkey to inoculation with defibrinated blood from cases of the disease described by Brill, it became important to determine the relationship of that disease to typhus fever; and for this purpose one of us proceeded to Mexico City, taking monkeys that had recovered from infection with the virus originally obtained from our Case No. 1 of Brill's disease, as well as fresh animals for controls.

Without going into details of our tests it is sufficient to state that 7 monkeys that had recovered from an infection with virus obtained from a case of Brill's disease were tested for their immunity to Mexican typhus, together with fresh animals. Of the 7 Brill-immune monkeys, not one showed any reaction as a result of inoculation with virulent typhus fever blood; while all 9 of the control animals developed the fever.

Ten monkeys that we had reason to believe to be resistant to Mexican typhus, and 8 fresh animals as controls, were tested for their susceptibility to Brill's disease. None of the Mexican typhus immune monkeys showed any indication of a reaction when inoculated with virulent blood, while 7 of the 8 control animals did react.

These results justified the conclusion that an attack of Brill's disease confers immunity to subsequent infection with Mexican typhus, and conversely, that an attack of typhus fever confers immunity to subsequent infection with Brill's disease. To put it in a simpler way, Brill's disease, so-called, and typhus fever are identical.

During the progress of the work necessary for the demonstration of the identity of the so-called Brill's disease and Mexican typhus we gave attention to various related problems. The particular one to which I refer is that of the mode of transmission. We found that the New York disease, as also the typhus of Mexico, may be transmitted from monkey to monkey by the bite of body lice that had been allowed to feed on monkeys sick with the disease; these results were in harmony with and confirm those previously reported by ourselves and others.

We were unable to transmit the disease by the bite of bed-bugs, or by the innoculation of the buccal and pharyngeal secretions from a human case of typhus. I am convinced that

the only way by which typhus fever is transmitted is by the bite of the body louse, and possibly by that of the head louse.

Now that it is shown that typhus fever is identical with Brill's disease and that Brill's disease has been endemic in the city of New York for a great many years, there is a good reason to believe that what is true of New York is true also of other large American and Canadian cities. In fact, since our first work appeared, cases have been reported from several cities (Atlanta).

When one recalls how frequently the mild forms of even the familiar infectious diseases are overlooked it need occasion no surprise that the benign form of a disease, usually thought of in our country as an exotic plague or at least perhaps as a medical curiosity, should fail of recognition. That this is not applicable to typhus alone is strikingly shown by the history of pellagra and of hookworm disease in the United States.

I wish to point out that the recognition of these mild forms of typhus gives us a rational explanation of what Osler has well characterized as a "remarkable feature of typhus, namely, the occurrence of a few new cases at long intervals of time from any other outbreaks, and at great distance from any known foci of the disease. In other words, these mild forms constitute the missing epidemiological link between so-called sporadic cases or outbreaks. In the perpetuation of typhus this mild form plays somewhat the same rôle that the "missed" or the "carrier" cases do in such diseases as diphtheria and typhoid.

December 16, 1912.

Dr. H. M. Thomas exhibited three cases.

The first patient whom I shall show you to-night presented himself to the Neurological Dispensary last July, complaining of a paralysis of one side of the body. He gave a history of having suffered from a paralytic stroke sometime back, but nothing else of importance; indeed, he considered himself well up to this incident.

Upon examination, a condition that interested us greatly was discovered. There was a loss of power on the left side of the usual hemiplegic type. The patient's walk, instead of being the usual spastic walk of the hemiplegic, has, as you see, on the left side the flaccid steppage gait characteristic of the paralysis in multiple sclerosis. The left arm, however, is somewhat spastic and held in a fairly characteristic manner. As I test the deep reflexes, you will see that those in the right arm are present, but that those in the left arm are quite markedly exaggerated. In the legs, however, neither the knee-kick nor the ankle-jerk can be obtained on either side, and there is not the least sign of increased muscular tension in the left leg. The jaw-jerk is exaggerated.

Plantar stimulation gives on the left side a definite dorsal flexion of the great toe, while on the right side the stimulation is followed by a plantar flexion.

We have then a hemiplegic in whom the expected signs of spasticity are absent from the leg, even though the presence of a Babinski reflex indicates clearly that the pyramidal tract is affected.

The explanation of this was not clear until the routine examination revealed the fact that the patient was suffering from an unsuspected tabes. The lesion of this disease has implicated the posterior root fibres and destroyed the afferent part of the reflex arc of the legs. Sherrington has shown in his experiments on decerebrated and decapitated animals that the spasticity which develops under these circumstances depends upon the integrity of the segmental reflex mechanism, as do also the shortening and lengthening reflexes—those reflexes which give plasticity to the limbs. The spastic rigidity in hemiplegia is similarly conditioned, and could not occur in this case of tabes where the leg has, to use Sherrington's term, been de-afferented. In the arm the tabetic lesion has not destroyed the reflex arc, and we have here exaggerated reflexes and slight spasticity. The diagram on the board will indicate the condition of affairs.

The second patient Dr. Thomas showed was a young man 19 years old, who presented a very typical picture of progressive muscular dystrophy, associated with marked hypertrophy of certain of the muscle groups.

The third patient was a case of total left-sided facial paralysis, associated with complete deafness of the left ear, the condition following the administration of a dose of salvarsan for primary leutic infection.

Dr. Crowe demonstrated this case more in detail.

February 3, 1913.

Dr. E. R. Stitt read a paper on Dengue: see p. 117 of this issue.

DISCUSSION.

Dr. Goldberger: After Dr. Stitt's presentation I am in rather an embarrassing position. If I were permitted to discuss typhus or yellow fever, I might have something to say that he has not mentioned. The subject, however, has a great deal of practical interest to the American physician. Last summer there was a very extensive epidemic of dengue in Florida; in Tampa alone there were some 10,000 cases. Dengue, when mentioned, brings a smile to the listener, but I think Dr. Stitt's account is sufficiently convincing that the person suffering from an attack does not consider it a jest.

The mortality of the disease is almost nil. It does, however, produce a great reduction in vitality, and in places where an epidemic has occurred, the general death rate, subsequent thereto, is apt to rise. Aside from this, there is a great similarity between dengue and yellow fever. They are both mosquito-borne. The *Culex fatigans* is almost certainly the insect responsible for the dengue epidemics. Observations of epidemics and experiences such as Dr. Stitt reports permit of little doubt that the disease is transmitted by the mosquito. An epidemic of dengue is very much like an epidemic of yellow fever; but the epidemic of dengue spreads much more rapidly; in a given time the dengue epidemic reaches extensive proportions while that of yellow fever will still be relatively circumscribed. One explanation of this difference is that the "extrinsic" incubation in the mosquito *Culex fatigans* is not so long as that in the yellow fever mosquito.

Clinically there are other points, both of resemblance and difference. Dr. Stitt has brought these out very sharply. In field work, the question of differential diagnosis between yellow fever and dengue frequently comes up. The leucocyte count is very helpful, but for the field worker, not always available. He must only too frequently depend upon the clinical manifestations alone. In this connection there are one or two points I would like to emphasize. The slow pulse in dengue, that has been described by different observers. Personally, my own observation is not identical with that of Dr. Stitt. The pulse is not as slow in dengue as one would expect to find from the accounts of this disease. But such things are relative. It is not as slow as in yellow fever, though no doubt slower than in many of the common febrile states; such as influenza, for example, with which, by the way, it is not uncommonly confused.

There is one other point, and that is the short intermission that occurs in dengue and also in yellow fever, not very definitely emphasized in the literature so far as yellow fever is concerned. There may be a rapid rise in the temperature for the first twenty-four hours succeeded by a fall to normal, then a second rise. I have seen cases of this kind with an intermission of from four to twelve hours; it is very confusing, especially in the South. It suggests malaria.

Now for the differential points in the two fevers! There is no difficulty in recognizing a fully marked case of dengue—the picture is complete. The same in yellow fever. They are just as easy to recognize as is a case of pneumonia.

The difficulty arises when you come to deal with a case not well defined, and we meet with such cases more often than might be supposed. If we had a case without decided leukopenia, no eruption, and a slight albuminuria, the latter would suggest yellow fever. The practitioner of the South would hesitate to call such a case yellow fever; he would rather call it dengue. How should he avoid making that mistake, consciously or unconsciously? If he compares the two diseases, type for type, he will find it much easier to arrive at a differentiation. If he takes a case of dengue with a sharp rise and run of fever, say 103 or 104, and compares it with one of yellow fever of the same degree, the latter would show other characteristics, notably jaundice and a pulse rate down to 50 or 60. With a picture of that sort you ought to have no difficulty in telling dengue from yellow fever. In the absence of jaundice and hemorrhagic symptoms, except for the not invariable leukopenia, there is no real way of deciding. If the eruption is present, you would say it is dengue, but often the eruption is absent. In about 50 per cent of the cases no eruption appears. The only thing to do as a safeguard is to put all cases of fever under a mosquito bar and wait for developments. Even then the diagnosis may have to be deferred. In southern countries, if one runs across a case of fever, the safe and rational thing to do always is to put it under a mosquito bar. Mild, imperfectly defined cases are undiagnosable except by waiting for graver cases to occur.

DR. STITT: I must say that I possibly brought out the occurrence of the slow pulse in dengue somewhat stronger than I should have for the reason that I wanted to work in Rush's observation of the slow pulse of yellow fever. Dr. Carter represents the pulse relationship between dengue and yellow fever as it exists in the United States. In the Philippines, in the matter of differentiation between influenza and dengue, the slow pulse is of importance. In the first day of the attack of dengue the pulse will be about 100. For the first two or three days it will stay between 90 and 100—then, with the first drop and going on into the second febrile paroxysm, it will be down to 60 or 65.

DR. H. R. CARTER: I have seen no dengue since 1904. At that time I think none of us knew of the particular help of the blood picture in diagnosis. I did not, at any rate. As regards the pulse rate, I agree with Dr. Goldberger; I think it differs considerably in different parts of the country. In the great epidemic of '97-'98 in Texas and Louisiana, there was no slowness of the pulse with the first fever; it always fell in the intermission and in the second rise of fever the pulse continued slow. The same in the Key West epidemic of '95. I would quote: during the first fever the pulse falls markedly when the fever goes down, and does not rise with the second fever. In the clinical differential diagnosis with yellow fever and dengue, I think (I am not speaking of the blood picture), I think no one can see any difference between them in the beginning, because there is no difference between them in the beginning. Dr. ——— who has had a large experience in yellow fever, I saw make mistake after mistake, because he did not wait. Both begin with red face, with red gums, and conjunctivæ; with a ridged tongue; both of them begin with active congestion of the mucous membranes and skin. For 24, 36, or even 48 hours there is no difference between the facies of dengue and yellow fever.

Dr. Goldberger is perfectly right as to the difficulty of diagnosis from appearances the first day, for you don't know whether it is yellow fever or whether it is dengue. You cannot tell until the next day.

JOHNS HOPKINS HOSPITAL BULLETIN.

The Hospital Bulletin contains details of hospital and dispensary practice ; abstracts of papers read and other proceedings of the Medical Society of the Hospital, reports of lectures, and other matters of general interest in connection with the work of the Hospital. It is issued monthly. Volume XXIV is now in progress. The subscription price is $2.00 per year.

(Foreign postage, 50 cents.) Price of cloth-bound volumes, $2.50 each.

A complete index to Vol. I-XVI of the Bulletin has been issued. Price 50 cents, bound in cloth.

NOTES ON NEW BOOKS.

The Prospective Mother. A Handbook for Women during Pregnancy. By J. Morris Slemons, Associate Professor of Obstetrics, Johns Hopkins University. (*New York and London: D. Appleton & Co., 1912.*)

In his preface the author of this excellent little volume tells us that it is written for the use of women with no special knowledge of medicine to answer questions which may occur to them concerning the general hygienic measures for safe-guarding their health during pregnancy. When one considers the vast number of books now published on questions relating to sex, reproduction, etc., and advertised in a lurid style (to which they owe their sale) in journals read by women, this work will fill a long felt want, for it is written in a manner that one most ignorant on technical subjects cannot fail to understand it.

The subject is treated under twelve chapters, with the following headings: I. The signs of pregnancy and date of confinement. II. Development of the ovum. III. The embryo. IV. The food requirements during pregnancy. V. The care of the body. VI. General hygienic measures. VII. Ailments in pregnancy. VIII. Miscarriage. IX. Preparation for confinement. X. The birth of the child. XI. The lying-in period. XII. The nursing mother.

The only chapters to which the reviewer can offer anything in the light of adverse criticism are those upon the development of the ovum and the embryo. The author admits that these subjects do not readily lend themselves to a popular description, and although he has handled them with remarkable skill it is doubtful that the average woman will be able to obtain much of an idea of some of the extremely complicated problems of embryology, after reading this portion of the work. It would probably be impossible to write such a book without some reference to these subjects and unquestionably if some of the main principles of embryology and development are understood the prospective mother will be able more rationally to care for herself and her unborn child. For these reasons the chapters mentioned are in no way out of place.

The rest of the work deserves the highest praise. Too much cannot be said of the excellent points brought out in the chapters referring to the food requirements, care of the body and general hygienic measures; as the writer here clearly demonstrates his familiarity with the chemistry of physiologic metabolism. He is positive in his advice that every prospective mother should be under competent medical supervision from the outset.

In the chapter on miscarriage, there is much of material value upon the medico-legal and moral aspects of abortion. It is sometimes surprising to the practising obstetrician to find that a woman of high moral education and training is entirely ignorant upon this important question. That this ignorance is feigned in many instances for personal convenience must be admitted, yet, even among the better educated such is frequently the case. To those who need instruction upon this point no better reading can be offered than that contained in the volume under consideration.

The chapters dealing with labor are extremely carefully written and contain much of great practical value to the prospective patient. The importance and reasons for sterilization are thoroughly gone into and not a little space is allotted to a brief résumé of the history of antisepsis in obstetrics, so that the reader may thoroughly appreciate its true significance. The advice that cases in which trouble may be expected can be best treated in a well-regulated hospital will markedly appeal to the practising physician, who has been handicapped by the inconvenience of the home in such instances. The same may be said of the author's advice against the employment of untrained or partially trained nurses.

Much more might be said of many of the excellent features of the work. There is nothing whatsoever in the text that is calculated to arouse the fears of the nervous individual and where it is necessary to refer to some of the more disagreeable features of the condition the author has been extremely careful in his choice of language, and there is nothing that might offend or cause apprehension to the most sensitive.

Obstetricians will find it a most valuable book to place in the hands of their patients.

Pharmacology and Therapeutics for Students and Practitioners of Medicine. By H. C. Woods, Jr., M. D. $4. (*Philadelphia and London: J. B. Lippincott Company, 1912.*)

The subject matter of this 413-page volume is arranged in chapters as follows: Chapter I. General pharmacological and therapeutic considerations. II. Drugs used to affect secretions. III. Drugs used to affect nervous system. IV. Drugs used to affect circulation. V. Drugs used to affect alimentary tract. VI. Drugs affecting metabolic processes. VII. Drugs acting on causes of disease. VIII. Extravenous remedies. IX. Drugs of minor importance.

Although the drugs are dealt with in a systematized way pharmacologically, no systematic consideration of the treatment of disease is given. The usual therapeutic procedures, such as paracentesis (abdominal or thoracic), introduction of nitrogen into the pleural cavity, intraspinal injection of serum, strapping the chest wall, etc., etc., are not described; nor does the work deal with vaccine serum, hydro-, mechano-, or psychotherapy. No therapeutic index is appended, therefore the information wanted by the therapeutist is not always readily found. The subject matter relating to therapeutics is not always sufficiently detailed, as for instance in the section dealing with the administration of salversan. In this latter connection it was noted that the dose recommended is only one-tenth of that usually employed for adult males. The book therefore is one of pharmacology and does not justify the "Therapeutics" which is included in the title.

As a work on pharmacology, though perhaps somewhat elementary, it will be found of considerable value to students and to the practicing physician.

L. G. R.

Skin Grafting for Surgeons and General Practitioners. By Leonard Freeman, M. D. Illustrated. $1.50. (*St. Louis: C. V. Mosby Company, 1912.*)

This monograph considers in a brief way the general subject of skin grafting. It is divided into 12 chapters, as follows: I. Terminology. II. Comparative Vitality of Grafts from the Old and from the Young. Heterogeneous Grafting. Dangers of Transferring Disease. Influence of the Patient's General Condition upon Skin Grafting. Surgical Cleanliness. III. The Method of Reverdin. IV. The Method of Thiersch. Its use in Special Cases. V. The Wolfe-Krause Method. VI. The Method of Hirschberg. Skin-Periosteum-Bone Grafts. VII. The Transplantation of Mucous Membrane. Anomalies in Skin Grafting. Sponge Grafting. VIII. Grafting from Animals. IX. Grafting in Lupus, in X-ray Burns, on the Cranium, and in Connection with the Eye and Ear. X. Local Anesthesia in Skin Grafting. XI. Histology and Pathology. XII. Brief Comparison of Different Methods of Skin Grafting.

There is little in the text which is not familiar to those who are conversant with the subject, and there are few, if any, original ideas advanced by the author.

The references are well chosen and full credit is given to those whose papers have been consulted in the preparation of the work. The book is well written and nicely gotten up.

It is a timely contribution, as there is no other book written in English which deals entirely with skin grafting. It will be of particular value to those who do grafting only occasionally, as it contains in a short space the best ideas on the subject.

J. S. D.

Tuberculin in Diagnosis and Treatment. By LOUIS HAMMAN, M. D., and SAMUEL WOLMAN, M. D. (*New York: D. Appleton & Co., 1912.*)

American students of tuberculosis and sanatorium physicians should greet this book gladly. It is the third work on tuberculin in English that has appeared in 1912, but far more valuable and complete than either the translation of Sahli's Tuberculin Treatment or the small book by Rivière and Morland, which have only a provincial character.

The authors disclaim the intent to produce a book for specialists or to present a complete review of the literature. Nevertheless they have fairly accomplished these purposes, for they have fully discussed what is known of the principles of tuberculin action and in the last two chapters covered all of importance in its use for diagnosis and treatment. It is therefore a very useful book to the specialist to whom the foreign literature is not accessible.

The liberal quotation from Koch's first paper on tuberculin is well chosen, but in the translation the word "vaccinate" would be better rendered "inoculate." In the first chapter the reader is clearly shown the evidence, so long unappreciated, that tuberculin reaction does not necessarily mean disease in the clinical sense. The literature on the nature of the tuberculin reaction and its explanation as related to anaphylaxis is well covered. In this chapter the words proteid and protein are used interchangeably, though the latter is preferable. A few errors in interpretation of the literature are of minor import. On page 56 it is stated that tuberculin never sensitizes normal animals. While this is true of the skin, they may suffer anaphylactic shock. The summary of the relation of hypersensitiveness to immunity in tuberculosis is very timely. The reproduction of Roemer's temperature charts aids in fixing the principles, and what will impress a reader familiar with the subject from the experimental side is the clearness with which the authors have grasped the meaning of these and set forth their clinical application. The majority of medical readers who will peruse this book because of their interest in tuberculin should not neglect this important chapter.

Under the "Use of Tuberculin in Diagnosis" all forms of the test are well explained. From the ample clinical experience of the authors they argue for the retention of the conjunctival test as an aid to separating clinical tuberculosis from old healed infections. Doubtless they realize its general abandonment since they freely discuss its disadvantages. Its usefulness is debatable. The subcutaneous test is advised only for focal reactions and not to exceed 5 mg. (a most desirable rule in the opinion of the reviewer, though he would use it for a final exclusion test in the absence of cutaneous reactions). The selection of a maximal dose is wisely judged to be dependent on the desire to exclude active tuberculosis.

Excellent rules are given for making the tests, but more reiteration of the wide variation in strength of tuberculins due to imperfect standardization—especially in America—would be desirable. The intracutaneous test is regarded as too delicate for diagnosis but more valuable than the cutaneous as a measure of hypersensitiveness. Tables of statistics of the various tests in relation to age, etc., add to a very complete review of the subject. Too much space relatively is devoted to the discussion of Detre's alleged differential human-bovine test which *à priori* never deserved serious attention. The estimate of the uncertain value of quantitative tests is commendable, the repetition of the limitations of tuberculin in diagnosis is most admirable, and its dangers fairly argued out of court by wise cautions.

The chapter on the use of tuberculin in treatment takes up the methods of preparation, details the various kinds, their chemistry, results of experiments and clinical results. Under "Methods of Administration" the authors give their own methods and experiences, introducing typical charts and illustrative cases of great practical value to physicians who would embark on this therapy. They are exponents of the gradual or "timid" method of Trudeau and Sahli and give cogent reasons for it, sometimes in colloquial, picturesque phrases. They believe in mild focal reactions and that the best rationale is found in a stimulation of the foci by increasing doses and are convinced that their results are good. They do not publish their own statistics thus far but give full references to others and discuss the proper basis for judging results.

Taken as a whole, the literature has been thoroughly culled and full references are given on each page. A few errors are noted in the description of tuberculins. Under Von Ruck's "Watery Extract" is given the method of making the so-called "antiphthisin" on page 217. For "Endotin or Moeller's Tuberculin" is evidently meant Gabrilowitsch's, page 221. On page 70, "glowworm" should be "slowworm." A few other words stare at a proof reader, yet it is needless to specify. Incidentally the reviewer must not omit to congratulate the authors upon their good style and command of vocabulary which rank the book in a literary class above the average.

Surgical Operations with Local Anesthesia. By ARTHUR E. HERTZLER, M. D., Kansas City, Mo. Price $2.00. (*New York: 91 William Street. Surgery Publishing Company, 1912.*)

The author says in the preface that his object in writing the book is to furnish in a convenient form the technic of some of the commoner operations that can be done in a satisfactory manner under local anesthesia. For the most part he presents his own methods. He considers the general principles of local anesthesia and the technic of administration; the drugs employed and their use in the various regions of the body.

The book is well printed and nicely gotten up. The marginal notes are convenient. This monograph will be of interest to surgeons as it contains many valuable suggestions, and should be especially useful to the general practitioner, who is occasionally called upon to perform minor operations under local anesthesia.

J. S. D.

Minor Surgery. By LEONARD A. BIDWELL, F. R. C. S., etc. Second Edition. Revised and enlarged. Illustrated. Price $3.75. (*London: University of London Press; New York: Oxford University Press, 1912.*)

The first edition of this book was reviewed last year in the May number of the Bulletin. There is little to add to what was said at that time, except that the second edition is larger and is much improved in appearance.

There has been considerable advantageous revision of the text, and a chapter on Bandaging, Strapping and Minor Injuries has been added.

J. S. D.

A History of Nursing from the Earliest Times to the Present Day with Special Reference to the Work of the Past Thirty Years. Edited and in part written by LAVINIA L. DOCK, R. N. In four volumes. Vols. iii-iv. (*New York and London: G. P. Putnam's Sons, Publishers, 1913.*)

The first and second volumes of this most comprehensive work were prepared by Miss Nutting and Miss Dock. The present volumes it will be seen are issued under the editorial supervision of Miss Dock, assisted by many willing workers, in every country. The completed work furnishes a full and detailed account of the present state of nursing throughout the world and is worthy of all praise.

The volumes before us contain voluminous chapters on the "Nurses of Great Britain and Ireland," on the "Growth of Nursing in the United States," on "Nursing in the Countries of Europe,"

on the "Revolution in French Hospitals," on the "Rise of the German Free Sisters," on "Pioneer Work in Switzerland, Holland and Belgium," on "Modern Nursing in an Ancient Setting" (Nursing in Italy and Spain), on "Nursing in New Continents" (Canada, Newfoundland, Australia, New Zealand and Africa," on "Nursing Sisters of the Orient" (India, China, Corea, Japan), and finally on "Some Island Hospitals and Nurses" (Cuba, Porto Rico and the Philippines).

The record is marvelously interesting and the tale of the labors of heroic and self-sacrificing women is inspiring. The only omissions worthy of note are similar accounts of nursing in the Canal zone and in Mexico. The chapter on the growth of nursing in the United States traces in great detail the steps which have been taken by the wise promoters of the movement in this country to produce the practical and educational conditions which in the past twenty years have transformed our training schools and unified the profession of nursing. Adequate tributes are paid to the women who furnished the brains to direct and the ideas through which others have wrought out great improvements. The volumes are finely illustrated and attractively presented. Miss Dock is to be congratulated upon the success of her laborious undertaking.

Every person interested in the development of nursing should possess a copy of this monumental work.

Surgery and Diseases of the Mouth and Jaws. By VILRAY PAPIN BLAIR, M. D. Professor of Oral Surgery in the Washington Dental School. Illustrated. (*St. Louis: C. V. Mosby Company, 1912.*)

The author says that in spite of all the special work that has been done in the study of the mouth and allied structures, the ordinary standard of surgical treatment given to diseases and deformities of the mouth does not equal that attained in other regions of the body. His idea in undertaking the work is to present the more pertinent observations of the constructive workers in the medical and dental profession. He has succeeded admirably in his object.

The book contains 44 chapters and is well planned and nicely printed. The numerous illustrations are excellent. It is an interesting practical study of the subject, and will be of special value to the operating surgeon. J. S. D.

The Development of the Human Body. A Manual of Human Embryology. By J. PLAYFAIR MCMURRICH, M. D., etc. Fourth Edition, Revised and Enlarged. (*Philadelphia: P. Blakiston's Son & Co., 1913.*)

All who know this excellent embryology will welcome the new edition, which has been brought up to date. It is the best English manual on this subject, and for the average student is sufficient, without being superficial or incomplete; it furnishes him a thorough grounding in a difficult science, and is so written as to be attractive—a difficult task in a branch of medicine which seems unusually dull and hard to the beginner.

Napoleon's Campaign in Russia, Anno 1812. Medico-Historical. By DR. A. ROSE. (*New York: Published by the Author, 1913.*)

Medical students unfamiliar with the history of this campaign will find a vivid account of it in this small volume of Dr. Rose, who has gathered together various reports by doctors and others who accompanied the army. The sufferings of the soldiers were horrible; they lacked food and clothing; had to endure frightful cold, and were in want of all proper medical care. Probably no army of the size of Napoleon's ever went through such a hideous campaign, and it is to be hoped that no army will ever again have to endure what it did. Such a picture of needless suffering and waste of life should make all readers strong peace advocates. It is to be regretted that Dr. Rose did not draw more fully on such published medical accounts as exist of this campaign, for from a medical point of view it is one of exceptional interest. Napoleon always tried to take the best care possible of his soldiers and it would be most interesting, if such documents exist, to know the exact medical arrangements made beforehand for this campaign. Larrey, the great surgeon, whom Napoleon admired above almost all his associates, accompanied him on the journey to Moscow and one longs to know more about what Larrey, the most humane of men, did for the soldiers.

Golden Rules of Surgery. By AUGUSTUS CHARLES BERNAYS, M. D., etc. Second Edition. Revised and Rewritten by WILLIAM THOMAS COUGHLIN, M. D. $2.50. (*St. Louis: C. V. Mosby Company, 1913.*)

This is one of the volumes of the Golden Rule Series. Dr. Bernays was a brilliant surgeon in St. Louis, and his book of rules has its value. He copied many of them from a selection made by Fenwick, an English surgeon, and now the volume undergoes a third revamping. Students who try to learn surgery or any other branch of medicine by "golden rules" will not advance far, and these volumes should be used only in conjunction with the larger treatises on surgery, medicine, etc.

Vaccine Therapy and Opsonic Treatment. By R. W. ALLEN, M. D., B. S. (Lond.). $3. Fourth Edition. (*Philadelphia: P. Blakiston's Son & Co., 1913.*)

The merits of this work were noted, on the appearance of its second edition, in the Bulletin of March, 1909. A third edition was published in 1910, and the author now deems it necessary to rewrite the work in great measure and enlarge it, for the same reason that the third edition was called out, namely "the great developments and extensions which have been made in vaccine therapy" since the last issue. For laboratory workers this is a most useful book, for the author has collected much information on the use of vaccines in a large number of diseases, and describes clearly the proper administration of these bodies. The general practitioner, on the other hand, will possibly get a somewhat false idea of the value of vaccines from reading Dr. Allen's book, and should be cautious in recommending their administration, except by some physician who has made himself expert in this line of work. Whatever the further results of study may prove as to the real value of vaccines in a variety of diseases, this book, at the present time, is both serviceable and important.

Diet and Hygiene in Diseases of the Skin. By L. DUNCAN BULKLEY, M. D. (*New York: Paul B. Hoeber, 1913.*)

There is no question that in diseases of the skin diet plays a most important rôle and Dr. Bulkley, from his very large experience, treats this subject in a simple, clear and authoritative manner. He first lays down certain general principles underlying the treatment of skin affections in general, and then takes up more particularly some of the commoner diseases. The book is composed in large part of lectures delivered to post-graduate students. The author has not attempted to write a large comprehensive treatise but rather to summarize the results of his own practice, and for the general practitioner the book is a good one.

Internal Medicine. By DAVID BOVAIRD, JR., M. D., etc. Illustrated. $5. (*Philadelphia and London: J. B. Lippincott Company, 1912.*)

This work is a good abridged summary of most of the latest work on internal medicine. It is well proportioned but all much too brief to warrant its title.

The book would be of value to the junior student or busy practitioner and could well be termed "a student's manual of internal medicine."

Health Through Rational Diet. By Arnold Lorand, M. D. (Carlsbad). $2.50. (*Philadelphia: F. A. Davis Company, 1912.*)

Many a book has won a success by being introduced to the public by a man of established reputation for great ability. We fear, however, that Dr. Victor C. Vaughan's introductory words will not suffice to persuade the profession at large to buy Dr. Lorand's work. The author is known to many travelers as one of the leading practitioners at Carlsbad. Were it not for this sort of international reputation it is questionable whether his book would have been translated. Boiled down to one-third its present size, it would serve a sufficiently good purpose of telling the uninitiated something about foods, diet, and health. In its present form it may help and amuse, for it is written in a pleasant light style, those who have time to read it, but it cannot be considered as a text-book for students. It is a popular work, in the sense above indicated, that it is written for a leisure class, such as those who have to go to Carlsbad to restore their over-worked digestive tracts.

Medical Men and the Law. By Hugh Emmett Culbertson. (*Philadelphia and New York: Lea & Febiger, 1912.*)

Many physicians will welcome this book, and we also are glad to welcome it. The author is a member of the Ohio and New York bars, and he has compiled an excellent work on the "legal rights, duties, and liabilities of physicians and surgeons." While the statutes of many of the states vary on these very points yet there is often need for a physician or surgeon to be able to refer to a legal book which makes these plain to him, and here we have it. This book will not relieve a doctor of the necessity of seeking a lawyer's advice, in case of a medico-legal suit or trial, but it will aid him by showing him how similar cases have been decided in various states. The author has divided his work into the following chapters: Definitions, Who May Practise Medicine and Surgery, Relation of Physician to Patient, Compensation, Malpractice or Negligence, Criminal Liability of Physicians and Surgeons, Exemptions of Physicians and Surgeons, Physicians and Surgeons as Witnesses, Right to Protect Professional Reputation, Validity of Contract Restricting Exercise of Profession, and Wills. Any large practitioner is likely to have to meet one or more of these problems not infrequently, and unless he has had exceptional advantages, he will be at a loss to know what is the correct attitude for him to assume in some trying positions. He will be much aided by a careful perusal of this well written treatise, one not marred by legal technicalities of phrase, which so often make a legal judgment difficult of comprehension to the average reader.

Oxford Medical Publications: The Surgery of the Rectum for Practitioners. By Sir Frederick Wallis, M. B., etc. (*London: Henry Frowde and Hodder & Stoughton, 1912.*)

This book is so similar in general to the numerous other text-books on the same subject in English, that one wonders a bit at the need for such reduplication of effort. Like the rest it begins with a chapter on regional anatomy, which is the weakest part of this particular volume, and might well be left out of all such books. The usual rectal diseases are taken up in successive chapters and are satisfactorily discussed. The book is well written and the author shows a commendable tendency to delete from his text many of the traditional classifications and procedures that are becoming obsolete. The important facts are presented clearly and with discrimination.

Certain features are noteworthy as distinguished from the ordinary content of works on rectal surgery. Wallis attaches great importance to the value of zinc cataphoresis produced by a rectal electrode in extensive and obstinate ulcerative colitis, and in the palliative treatment of carcinoma. Emphasis is laid on the relation of certain cases of colitis and proctitis to arthritis, and illustrative cases are cited in which the joint trouble has disappeared with the cure of the rectal condition. It is of interest that this author regards syphilitic stricture of the rectum as much rarer than is usually thought to be the case.

Great importance is attached to lesions of the delicate membrane at the ano-rectal margin, most of the inflammatory diseases as peri-rectal abscess, fistula, etc., being attributed to such portals of entry. The chapter on abscesses is particularly good, but one notes that this surgeon does not disturb the sphincter in acute abscesses in any case, and admits tacitly a high proportion of secondary fistulæ.

Unlike many proctologists, Wallis is a believer in the radical excision of hemorrhoids, the Whitehead operation and its modifications—with the proper qualification that it be employed where the indications justify it and not as an invariable routine. On one point in the discussion of this method issue may be taken with the writer. In disposing of the objections to the Whitehead operation, the contention that the removal of the mucosa renders the sense of warning less acute and hence entails a certain amount of rectal insecurity, is declared to be an "absolute fiction." An investigation of the late results of Whitehead's performed in this hospital, especially in the case of one or two unusually intelligent patients, convinces the reviewer that in rare instances this "fiction" is unfortunately true.

On the whole the book is clear and well balanced, being free from the padding with voluminous and unnecessary detail so common to this type of work. It meets the purpose for which it is expressly designed better than is usual. H. B. S.

Safeguarding the Special Senses. By Henry O. Reik, M. D., etc. Illustrated. 75 cents. (*Philadelphia: F. A. Davis Company, 1912.*)

The sub-title of this small, neatly printed volume, reads "General advice regarding the use and preservation of the eyes, ears, nose and throat." This describes its contents accurately. The advice given is simple, clear and good, so that the work should prove a help to the laity and also to nurses. We are brought up to take care of our teeth, but we have little instruction given us as to what to do in case of trouble of any of the organs of special sense, and it is well for the public to be instructed in such matters to the extent of Dr. Reik's brief but sufficiently comprehensive description.

Pathfinders in Medicine. By Victor Robinson. (*New York: Medical Review of Reviews, 1912.*)

The pathfinders selected are Galen, Aretaeus, Paracelsus, Servetus, Vesalius, Paré, Scheele, Cavendish, Hunter, Jenner, Laennec, Simpson, Semmelweiss, Schleiden and Schwann, and Darwin, the latter entitled by the author Saint of Science! We can conceive of no term which would have offended Darwin, the simplest of men, more than this. And this is but a sample of the florid and artificial style of the writer. Dr. A. Jacobi in a paragraph of his introduction to this book says that the author's facts are absolutely correct, and endorses the work as one that will instruct and edify its readers. This is no doubt true, but the student will find better studies elsewhere on almost all these pathfinders.

London Medical Publications: Treatment After Operation. By William Turner, F. R. C. S., etc., and C. Rock Carling, F. R. C. S., etc. (*London: University of London Press, 1912.*)

In a brief manner, which should make it most acceptable to the young student, the authors have described all the ordinary complications which may occur after any operation, including those on the eye—a chapter especially written for the book by

Dr. L. V. Cargill. The directions given are simple and reliable and the book is sufficiently and practically illustrated. Needless almost to add that some of the instruction is quite different from that commonly given in this country, but that ours is invariably right does not follow by any means; and it is well for us to study the opinions of others.

Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India. (*Calcutta: Superintendent Government Printing, India, 1912.*)

No. 54 (New Series). Studies on the Mouth Parts and Sucking Apparatus in the Blood-Sucking Diptera. No. I. Philæmatomyia Insignis (Austen), by CAPTAIN F. W. CRAGG, M. D.

No. 55 (New Series). The Structure of Hæmatopota Pluvialis (Meigen), by CAPTAIN F. W. CRAGG, M. D.

No. 56 (New Series). Malaria in the Andamans. By MAJOR S. R. CHRISTOPHERS, M. B.

The first two reports are of such a technical character that they will interest but a few special workers. It is, however, well worth while to call attention to these "Scientific Memoirs" that students of biological problems may know where to find certain carefully prepared and well illustrated papers.

Major Christophers has prepared a brief report on Malaria in the Andamans, of value especially to the authorities there, in demonstrating the carrier of the disease, and the best means of preventing the spread of the infection among the convicts.

International Clinics. Vol. IV, Twenty-second Series. $2. (*Philadelphia and London: J. B. Lippincott Company, 1912.*)

An article which will doubtless attract many readers in this volume is Auer's Description of the Rockefeller Institute. All intelligent physicians are interested from various points of view in this institution and it is fortunate that the *International Clinics* should have secured this paper. The proper method of tonsillectomy seems as yet unsettled, since Eves adds another to the many articles which have appeared in the last year on this subject. Weak feet, another quite modern surgical condition, is considered by Steinhardt in a lucid, well illustrated paper. Indicating that primary principles are not generally understood, Bergonignan writes on The Features of the Normal Heart. While many of the remaining clinics are excellent, some of them seem too brief to deserve recording in these volumes.

A Text-Book of General and Special Pathology for Students and Practitioners. By HENRY T. BROOKS, M. D., formerly Professor of Pathology at the New York Post Graduate Medical School and Hospital, etc. $6. (*Philadelphia: F. A. Davis Company, 1912.*)

In view of the numerous good, bad and indifferent books on Pathological Anatomy which have recently appeared, one wonders at the specific impulse which has led to the production of this volume. Dr. Brooks says in the preface that it was his original intention to prepare a translation of the third edition of "Grundriss der Pathologischen Anatomie," published in 1904 by Professor Robert Langerhans of Berlin. Unfortunately this idea was not carried out. Instead the author has felt it necessary to not only recast and greatly augment the subject matter to meet existing requirements, but to more fully adapt it to the needs of the undergraduate student and practitioner. The result is a new treatise presented as an independent work. This volume of more than 1700 pages of good paper is profusely illustrated by 525 half tones and other text engravings and 15 full page plates, etc., none of which can be considered to be brilliant. The heavy type and double spacing of letters so abundantly used are of questionable value and the use of Latin description, as has been done frequently by the author for the text figures, seems unfortunate.

The first paragraph of the book consists of a series of definitions which leave the reader somewhat confused after their perusal. The subjects are presented in the order usually found in text-books of pathology, but in many instances one can hardly feel that the author has taken advantage of the more recent advances in the subjects. Unfortunately these are not the greatest faults—these sins of omission—but the gross errors which are everywhere encountered throughout the book make it not only not valuable, but a dangerous book to put in the hands of anyone.

BOOKS RECEIVED.

A Treatise on Diseases of the Hair. By George Thomas Jackson, M. D., and Charles Wood McMurtry, M. D. Illustrated with 109 engravings and 10 colored plates. 1912. 8vo. 366 pages. Lea and Febiger, Philadelphia and New York.

Auto-Intoxication and Disintoxication. An account of a New Fasting Treatment in Diabetes and other Chronic Diseases. By Dr. G. Guelpa (Paris). Translated by F. S. Arnold, B. A., M. B., B. Ch. (Oxon.). With an Introduction by the Translator and a Chapter on the Use of the Method in the Treatment of Morphine Addiction. By Oscar Jennings, M. D. (Paris). 1912. 12mo. 152 pages. Rebman Company, New York.

Hypnosis and Suggestion. Their Nature, Action, Importance and Position amongst Therpeutic Agents. By W. Hilger, M. D. Translated by R. W. Felkin, M. D., F. R. S. E. With an introduction by Dr. von Renterghem. Translated by A. Newbold. 1912. 8vo. 233 pages. Rebman Company, New York.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles. Edited by Henry W. Cattell, A. M., M. D. Twenty-second Series. Volume III. 1912. 8vo. 306 pages. J. B. Lippincott Company, Philadelphia and London.

Surgery of the Brain and Spinal Cord. Based on Personal Experiments. By Prof. Fedor Krause, M. D. English adaptation by Dr. Max Thorex. Volume II. With 94 figures in the text, 14 of which are colored; 27 colored figures and four half-tone figures on fifteen plates. 1912. 4to. 819 pages. Vol. III. With 42 figures (three of which are colored) in the text, and 47 colored figures on 22 plates. 1912. 4to. 1201 pages. Rebman Company, New York.

The Therapy of Syphilis. Its Development and Present Position. By Dr. Paul Mulzer. With a preface by Prof. P. Uhlenhuth, M. D. Translated by A. Newbold. [1910.] 12mo. 247 pages. Rebman Company, New York.

Pathology and Treatment of Diseases of Women. Fourth edition, rewritten by A. Martin and Ph. Jung. Only Authorized English Translation, written and edited by Henry Schmitz, M. D. With one hundred and eighty-seven illustrations, twenty-five of which are in colors. 1912. 8vo. 475 pages. Rebman Company, New York.

Transactions of the American Urological Association. Eleventh Annual Meeting at New York City, April 2, 3 and 4, 1912. Edited by Charles Greene Cumston, M. D. 1912. 8vo. 439 pages. Riverdale Press, Brookline, Mass.

Elementary Bacteriology and Protozoology. The Microbiological Causes of the Infectious Diseases. By Herbert Fox, M. D. 1912. 12mo. 237 pages. Lea and Febiger, Philadelphia and New York.

Further Researches into Induced Cell-Reproduction and Cancer. Vol. II. Consisting of papers by H. C. Ross, M. R. C. S. Eng., L. R. C. P. Lond., J. W. Cropper, M. B., M. Sc. Liverpool, M. R. C. S. Eng., L. R. C. P. Lond., and E. H. Ross, M. R. C. S. Eng., L. R. C. P. Lond. With Illustrations. The McFadden Researches. 1912. 8vo. 125 pages. John Murray, London. P. Blakiston's Sons and Co., Philadelphia.

The Wassermann Reaction. Its Technic and Practical Application in the Diagnosis of Syphilis. By John W. Marchildon, B. S., M. D. Eleven Illustrations and Colored Frontispiece. 1912. 12mo. 103 pages. C. V. Mosby Company, St. Louis.

The Principles and Practice of Medicine. By Sir William Osler, Bt., M. D., F. R. S. Eighth edition, largely rewritten and thoroughly revised with the assistance of Thomas McCrae, M. D. 1912. 8vo. 1225 pages. D. Appleton and Company, New York.

Obstetrics. By J. Whitridge Williams. Third enlarged and revised edition. With sixteen plates and six hundred and sixty-eight illustrations in the text. 1912. 8vo. 977 pages. D. Appleton and Company, New York and London.

The Blood: A Guide to Its Examination and to the Diagnosis and Treatment of Its Diseases. By G. Lovell Gulland, M. A., B. Sc., M. D., F. R. C. P. E., and Alexander Goodall, M. D., F. R. C. P. E. With 16 text illustrations and 16 colored plates. E. B. Treat & Co., New York.

The Kallikak Family. A Study in the Heredity of Feeble-Mindedness. By Henry Herbert Goddard, Ph. D. 1912. 8vo. 121 pages. The Macmillan Company, New York.

A Practical Text-Book of the Diseases of Women. By Arthur H. N. Lewers, M. D. Lond., F. R. C. P. Lond. Seventh edition, with 258 illustrations, thirteen colored plates, five plates in black and white, and a large number of illustrative cases. 1912. 8vo. 540 pages. Paul B. Hoeber, New York.

Life and Letters of Dr. William Beaumont. Including Hitherto Unpublished Data Concerning the Case of Alexis St. Martin. By Jesse S. Myer, A. B., M. D. With an introduction by Sir William Osler, Bt., M. D., F. R. S. With fifty-eight illustrations. 1912. 8vo. 317 pages. C. V. Mosby Company, St. Louis.

Symptoms And Their Interpretation. By James MacKenzie, M. D., LL. D., Aber. and Edin. Second edition. 1912. 8vo. 304 pages. Paul B. Hoeber, New York.

The Anatomy of the Human Eye. As Illustrated by Enlarged Stereoscopic Photographs. By Arthur Thomson, M. A., M. B., F. R. C. S. 1912. 8vo. 61 pages. Clarendon Press, Oxford.

Burdett's Hospital and Charities 1912. Being the Year Book of Philanthropy and the Hospital Annual. By Sir Henry Burdett, K. C. B. K., C. V. O. The Scientific Press, London.

Nervous and Mental Disease Monograph Series. No. 12. Cerebellar Functions. By Dr. Andre-Thomas. Translated by W. Congers Herring, M. D., of New York. With 89 figures in the text. 1912. 8vo. 223 pages. The Journal of Nervous and Mental Disease Publishing Company, New York.

Medical Symposium Series. No. 1. Recent Studies of Syphilis. With Special Reference to Serodiagnosis and Treatment. Second edition (revised). A Reprint of Articles Published in the Interstate Medical Journal.

Nervous and Mental Disease Monograph Series. No. 4. Selected Papers on Hysteria and Other Psychoneuroses. By Prof. Sigmund Freud. (Second, Enlarged Edition.) Authorized Translation. By A. A. Brill, M. D., Ph. B. 1912. 8vo. 215 pages. The Journal of Nervous and Mental Disease Publishing Company, New York.

Making Good on Private Duty. Practical Hints to Graduate Nurses. By Harriet Camp Lounsbery, R. N. [1912.] 12mo. 208 pages. J. B. Lippincott Company, Philadelphia and London.

Internal Medicine. By David Bovaird, Jr., A. B., M. D. With 109 illustrations in the text and 7 colored plates. [1912.] 8vo. 618 pages. J. B. Lippincott Company, Philadelphia and London.

Clinical Bacteriology and Hæmatology. By W. D'Este Emery, M. D., B. Sc., Lond. Fourth edition. 1912. 8vo. 274 pages. P. Blakiston's Son & Co., Philadelphia.

Muscle Spasm and Degeneration in Intrathoracic Inflammations and Light Touch Palpation. By Francis Marion Pottenger, A. M., M. D., LL. D. Sixteen illustrations. 1912. 8vo. 109 pages. C. V. Mosby Company, St. Louis.

Brain and Spinal Cord: A Manual for the Study of the Morphology and Fibre-Tracts of the Central Nervous System. By Dr. Med. Emil Villiger. Translated by George A. Piersol, M. D., Sc. D. From the Third German Edition with 232 illustrations. [1912.] 4to. 289 pages. J. B. Lippincott Company, Philadelphia and London.

A Manual of Surgical Treatment. By Sir W. Watson Cheyne, Bart., C. B., D. Sc., LL. D., F. R. C. S., F. R. S., and F. F. Burghard, M. S. (Lond.), F. R. C. S. New Edition. Entirely revised and largely rewritten with the assistance of T. P. Legg, M. S. (Lond.), F. R. C. S., and Arthur Edmunds, M. S. (Lond.), F. R. C. S. In Five Volumes. Vol. III. *The Treatment of the Surgical Affections of the Joints, the Spine, the Head, and the Face.* 1912. 8vo. 575 pages. Lea and Febiger, Philadelphia and New York.

A Clinical Manual of The Malformations and Congenital Dis ases of the Fœtus. By Professor Dr. R. Birnbaum. Translated and Annotated by G. Blacker, M. D., B. S., F. R. C. P., F. R. C. S. With 58 illustrations in the text and 8 plates. 1912. 8vo. 379 pages. P. Blakiston's Son & Co., Philadelphia.

Manual of Human Embryology. Written by Charles R. Bardeen, Herbert M. Evans, Walter Felix, Otto Grosser, Franz Keibel, Frederic T. Lewis, Warren H. Lewis, J. Playfair McMurrich, Franklin P. Mall, Charles S. Minot, Felix Pinkus, Florence R. Sabin, George L. Streeter, Julius Tandler, Emil Zuckerkandl. Edited by Franz Keibel and Franklin P. Mall. In two volumes. Volume II. With 658 illustrations. 1912. 4to. 1032 pages. J. B. Lippincott Company, Philadelphia and London.

A Manual of Immunity. By Elizabeth T. Fraser, M. D. (Glas.) 1912. 12mo. 199 pages. James Maclehose and Sons, Glasgow.

Anæsthetics and Their Administration. By Sir Frederic W. Hewitt, M. V. O., M. A., M. D. Cantab. Fourth edition. Prepared with the assistance of Henry Robinson, M. A., M. D., B. C. Cantab. With illustrations. 1912. 8vo. 676 pages. Macmillan and Co., Limited, London.

Diseases of the Liver, Gall-Bladder and Bile-Ducts. By Humphry Davy Rolleston, M. A., M. D. (Cantab.), F. R. C. P. Illustrated. 1912. 8vo. 811 pages. Macmillan and Company, Limited, London.

Ophthalmic Surgery. A Handbook of the Surgical Operations on the Eyeball and Its Appendages as Practised at the Clinic of Hofrat Prof. Fuchs. By Dr. Josef Meller. Edited by Dr. William M. Sweet. With 173 original illustrations. Second edition, thoroughly revised. 1912. 8vo. 289 pages. P. Blakiston's Son & Co., Philadelphia.

Scientific Memoirs. New Series. By Officers of the Medical and Sanitary Departments of the Government of India. Superintendent Government Printing, Calcutta, India.

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Metropolitan Asylums Board. Annual Report for the Year 1911. (14th year of issue.) 1912. 8vo. 258 pages. Ben Johnson & Co., London and York.

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Bacteria. Dr. Max Schottelius. With 10 colored plates and 33 illustrations in the text. Second edition. Translated by Staff-Surgeon Herbert Geoghegan, R. N. 1912. 8vo. 324 pages. Henry Frowde, Hodder & Stoughton, London.

Medical Inspection of Schools. By Allen G. Rice, M. D., Fiske Fund Prize Dissertation. No. LV. 1912. 8vo. 109 pages. Snow & Farnham Company, Providence.

The Psychology of Insanity. By Bernard Hart, M. D. (Lond.). 1912. 16mo. 176 pages. University Press, Cambridge; G. P. Putnam's Sons, New York.

The Chemic Problem in Nutrition (Magnesium Infiltration). A Sketch of the Causative Factors in Disorders of Nutrition as Related to Diseases of the Nervous System. By John Aulde, M. D. Illustrated with four plates. 1912. 8vo. 410 pages. John Aulde, M. D., Philadelphia.

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Text-Book of General and Special Pathology. By Henry T. Brooks, M. D. Illustrated with 525 half-tone and other text engravings (110 in colors), also 15 full-page plates in colors, containing 40 figures. 1912. 8vo. 1127 pages. F. A. Davis Company, Philadelphia.

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Building a Profitable Practice. Being a Text-Book on Medical Economics. By Thomas F. Reilly, M. S., M. D. [1912]. 8vo. 290 pages. J. B. Lippincott Company, Philadelphia and London.

Tuberculin in Diagnosis and Treatment. By Louis Hamman and Samuel Wolman. 1912. 8vo. 381 pages. D. Appleton and Company, New York and London.

Transactions of the Clinical Society of the University of Michigan October, 1910-July, 1911. Volume II. 1911. 8vo. 224 pages. Ann Arbor, Michigan.

Transactions of the American Association of Genito-Urinary Surgeons. Twenty-sixth annual meeting held at Philadelphia, June 7 and 8, 1912. Vol. VII. 1912. 8vo. 315 pages. Published for the Association by Frederick H. Hitchcock, New York.

Skin Grafting. By Leonard Freeman, B. S., M. A., M. D. With 24 illustrations. 1912. 8vo. 139 pages. C. V. Mosby Company, St. Louis.

Atlas zur Klinik der Killianschen Tracheo-Bronchoskopie. Farbige Tafeln, nach pathologischanatomischen Präparaten von Fällen, die im Leben mit Hilfe der Tracheo-Bronchoskopie untersucht waren. Von Sanitätsrat Dr. Mann. 1911. Fol. Curt Kabitzsch, Würzburg.

Pathfinders in Medicine. By Victor Robinson. With a Letter from Ernst Haeckel and an Introduction by Abraham Jacobi. 1912. 8vo. 317 pages. Medical Review of Reviews, New York.

Diseases of Women. By Thomas George Stevens, M. D., B. S. (Lond.); F. R. C. S. (Eng.); M. R. C. P. (Lond.). With 202 illustrations. 1912. 8vo. 431 pages. University of London Press. Hodder & Stoughton, London; Henry Frowde, London.

Treatment After Operation. By William Turner, M. S., F. R. C. S., and E. Rock Carling, B. S., F. R. C. S. With a chapter on the Eye by L. V. Cargill, F. R. C. S. 1912. 8vo. 247 pages. University of London Press. Hodder & Stoughton, London; Henry Frowde, London.

Diseases of the Eyes. By C. Devereux Marshall, F. R. C. S. Fully illustrated. [1912]. 8vo. 303 pages. University of London Press. Hodder & Stoughton, London; Henry Frowde, London.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles. Edited by Henry W. Cattell, A. M., M. D. Twenty-second Series. Volume IV. 1912. 8vo. 298 pages. J. B. Lippincott Company, Philadelphia and London.

Transactions of the American Surgical Association. Volume the Thirtieth. Edited by Archibald MacLaren, M. D., Recorder of the Association. 1912. 8vo. 758 pages. Printed for the Association. William J. Dornan, Philadelphia.

The Internal Secretory Organs: Their Physiology and Pathology. By Professor Dr. Arthur Biedl. With an Introductory Preface by Leonard Williams, M. D., M. R. C. P. Translated by Linda Forster. 1913. 8vo. 586 pages. William Wood & Company, New York.

Michigan State Board of Health. Thirty-ninth Annual Report of the Secretary of the State Board of Health of the State of Michigan for the fiscal year ending June 30, 1911. By Authority. 1912. 8vo. 118 pages. Lansing, Michigan.

United States Treasury Department Public Health and Marine Hospital Service. Public Health Reports. Issued in weekly numbers by the United States Public Health Service. Volume XXVII, Part I. Numbers 1-26. January-June, 1912. 1912. 8vo. 1066 pages. Government Printing Office, Washington.

Surgical Operations with Local Anesthesia. By Arthur E. Hertzler, M. D. 1912. 8vo. 205 pages. Surgery Publishing, New York.

Safeguarding the Special Senses. General Advice Regarding the Use and Preservation of the Eyes, Ears, Nose and Throat. By Henry O. Reik, M. D. Illustrated. 1912. 12mo. 123 pages. F. A. Davis Company, Philadelphia.

A Manual of Elementary Zoology. By L. A. Borradaile, M. A. 1912. 12mo. 470 pages. Henry Frowde, London; Hodder & Stoughton, London; Oxford University Press, New York.

The Treatment of Disease in Children. By G. A. Sutherland, M. D., F. R. C. P. 1913. 8vo. 403 pages. Henry Frowde, London; Hodder & Stoughton, London; Oxford University Press, New York.

Association of American Physicians. Transactions. Twenty-seventh session, May 14 and 15, 1912. Volume XXVII. 1912. 8vo. 668 pages. Printed for the Association, Philadelphia.

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The course consists of lectures and laboratory instruction covering the Wassermann reaction, Widal reaction, etc.

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IV. **Diseases of the Circulation**—DR. A. D. HIRSCHFELDER, Associate in Charge of the Physiological Laboratory of the Medical Clinic, and DR. G. S. BOND, Assistant in Medicine.

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Tuesday, Thursday and Saturday, 2 to 4 p. m.

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VI. **Diseases of the Digestive Apparatus**—DR. T. R. BROWN, Associate in Medicine.

A course in the diseases of the digestive apparatus, with practical exercises in the use of the various diagnostic methods including sigmoidoscopy and fluoroscopy.

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This course will consist of daily ward rounds and operating clinics.

Rounds: 9 a. m. to 10 a. m., and operations, 11 a. m. to 12 m.

II. **Surgical Pathology**—DR. W. E. DANDY, Assistant Resident Surgeon.

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Daily, 10 a. m. to 12 m.

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Tuesday, Thursday and Saturday, 12 to 1.30 p. m.

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Instruction in the methods of diagnosis and treatment, with particular attention to bone and joint tuberculosis and the various non-tuberculous joint affections.

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Instruction in the treatment of scoliosis will be given. Rounds will be made in the public wards one morning of each week.

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In this course particular attention will be paid to wound healing, skin grafting, etc. Ward, dispensary and operative demonstrations will be given.

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Tuesday, Thursday and Saturday, 10 to 12 m.

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Practical instruction in X-Ray laboratory. Daily, 10 to 12 m. Lecture on Saturday at noon.

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Monday, Wednesday and Friday, 12 to 1 p. m.

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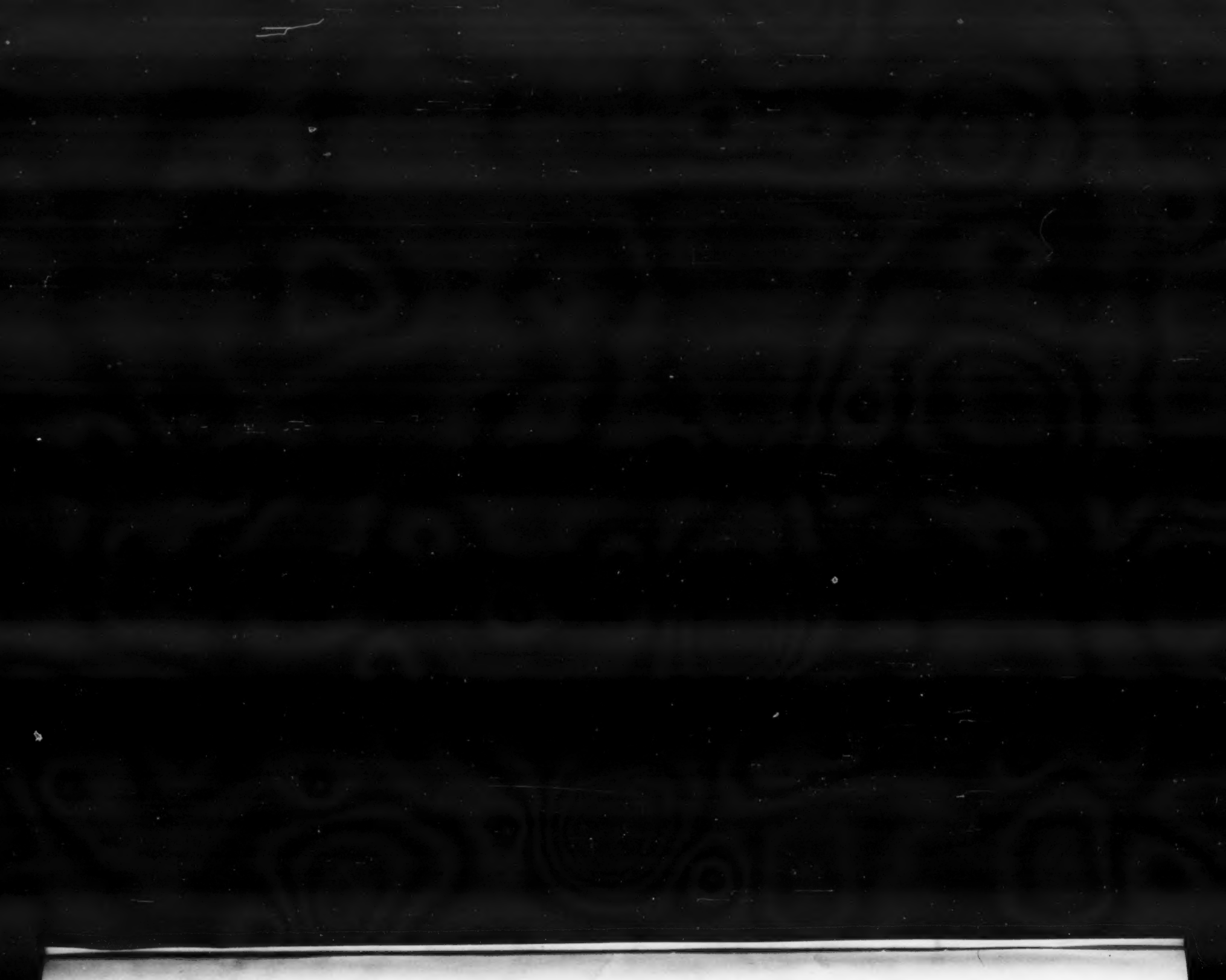
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